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Revision of the Aphodiinae of the Nepal-Himalayas*) (Coleoptera: Scarabaeidae)

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With 99 figures and 2 tables

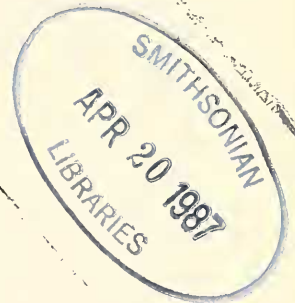
Summary

The results of a study of an extensive material of aphodiid beetles collected by several entomologists in the Nepal-Himalayas are dealt with. 78 species of Aphodiinae are treated concerning synonymy, complementary descriptions, list of localities in Nepal, data on general distribution, comments, keys to species and illustrations of pertinent morphological details. Out of the 8 genera and 77 species recorded, two genera and 23 species are indicated in Nepal for the first time, and four species are described as new to science: *Aphodius (Plagiogonus) martensi* n. sp., *A. (Paulianellus) trisuliensis* n. sp., *Aegialia (Silluvia) gosainkundae* n. sp., *Cnematoplatys numensis* n. sp. A biogeographical discussion on the Himalayan Aphodiinae complements the elaboration.

Zusammenfassung

Die Ergebnisse des Studiums umfangreicher Aufsammlungen der Aphodiinae (78 Arten) mehrerer Entomologen im Nepal-Himalaya werden mitgeteilt. Neben der taxonomischen Klärung erfolgen Angaben zur Synonymie, ergänzende Beschreibungen, Fundorte in Nepal, allgemeine Verbreitung, Anmerkungen, Art-Bestimmungstabellen und Abbildungen wichtiger morphologischer Details. Von den für Nepal gemeldeten 8 Gattungen und 77 Arten werden 2 Gattungen und 23 Arten erstmals für dieses Land nachgewiesen, 4 Arten werden neu beschrieben: *Aphodius (Plagiogonus) martensi* n. sp., *A. (Paulianellus) trisuliensis* n. sp., *Aegialia (Silluvia) gosainkundae* n. sp., *Cnematoplatys numensis* n. sp. Eine biogeographische Diskussion der Aphodiinae des Himalaya ergänzt diese Arbeit.

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Contents

1. Introduction	2
2. Biogeographical discussion.	3
2.1. Horizontal distribution in the Himalayan system	3
2.2. Vertical distribution in the Nepal Himalayas	4
2.3. Conclusions	7
3. List of the species	8
3.1. <i>Aphodius</i> including keys in most of the subgenera	8
3.2. <i>Oxyomus</i> including key	41
3.3. <i>Aegialia</i> including key of the subgenus <i>Silluvia</i>	42
3.4. <i>Saprosites</i>	44
3.5. <i>Cnematoplatys</i>	44
3.6. <i>Psammodius</i>	45
3.7. <i>Rhyssmodes</i>	48
3.8. <i>Rhyssemus</i>	48
4. References	48
5. Index of genera, subgenera and species	49

1. Introduction

The purpose of this paper is to provide all available data concerning the species of Aphodiinae of the Nepal-Himalayas, as well as a brief survey of the present knowledge of distribution patterns among Himalayan Aphodiinae. The work has been accomplished on the base of the materials collected in the course of the research expeditions listed below. Approximately 5800 specimens representing more than 80 species were borrowed from collections of the following institutions and individuals, indicated in the text by the associated abbreviations.

- BRIO:** Biosystematic Research Institute (Ottawa) — Canadian Nepal Expedition, 1967;
CF: Coll. H. FRANZ (Mödling-Vienna) — H. FRANZ, expeditions 1971, 1972, 1975;
CH: Coll. H. & A. HOWDEN (Ottawa) — I. LÖBL & A. SMETANA, expedition 1981, 1983, 1985;
 A. & Z. SMETANA, expedition 1982;
ISEZ: Institute of Systematic and Experimental Zoology, Polish Academy of Sciences (Cracow) — Polish Nepal Expedition 1981 (J. PAWŁOWSKI & A. KUSKA);
MHNG: Muséum d'Histoire Naturelle (Genève) — I. LÖBL & A. SMETANA, expeditions 1980, 1981, 1983, 1984;
NHMB: Naturhistorisches Museum (Basel) — W. WITTMER & C. BARONI-URBANI, expeditions 1976, 1978, 1979 (materials collected by BHAKTA BAHADUR); M. BRANCUCCI & C. J. RAI, expeditions 1983, 1985 (materials collected by DORJEE SHERPA);
SMF: Senckenberg Museum (Frankfurt/M.) and
SMNS: Staatliches Museum für Naturkunde (Stuttgart) — J. MARTENS, expeditions 1969/70, 1973; J. MARTENS & A. AUSOBSKY, expedition 1980; J. MARTENS, B. DAAMS & W. SCHAWALLER, expedition 1983;
ZSM: Zoologische Staatssammlung (München) — G. EBERT, expedition 1962.

The materials used are the property of the institutions and private sources mentioned above. The specimens collected by J. MARTENS et alii are largely deposited in the Staatliches Museum für Naturkunde Stuttgart (SMNS), some duplicates in the Senckenberg Museum, Frankfurt/M. (SMF).

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I wish to express my cordial thanks to Prof. J. MARTENS (Mainz), for the precious material he has committed to me, and the assistance in editing the present paper, as well as to the following persons and their respective institutions from which I was able to borrow material: Prof. H. HOWDEN (Ottawa), Prof. H. FRANZ (Mödling—Vienna), Prof. J. PAWŁOWSKI (ISEZ, Cracow), Dr. I. LÖBL & Dr. C. BESUCHET (MHNG, Genève), Dr. W. WITTMER & Dr. M. BRANCUCCI (NHMB, Basel), Dr. G. SCHERER (ZSM, München), Dr. J. MCNAMARA (BRIO, Ottawa).

2. Biogeographical discussion (map see fig. 99)

The analysis of the present-day fauna of Aphodiinae of Nepal and its connections with the faunas of neighbouring territories is the subject of the present discussion. There are still many gaps in our knowledge of composition and distribution of Aphodiinae living at various altitudes of the Himalayas, in India, and particularly in China. Thus it is difficult to make other than very tentative comments. The material studied and the scarce data gained from the available literature are bound to indicate the general features of the Himalayan Aphodiinae, and should perhaps lead to further detailed investigations.

An approximate picture of the differentiation of the local Himalayan faunas is shown in tables 1 and 2. Although the peculiarities of vertical and horizontal distribution of species are closely correlated, I shall, for the sake of convenience, consider them separately.

2.1. Horizontal distribution in the Himalayan system

The present mode of distribution of Aphodiinae fully corresponds to the pattern of geographical division of the Himalayas (according to MANI 1968, somewhat modified). The biogeographical units listed in table 1 are characterized as follows.

Table 1. Number of Aphodiinae-species in local faunas and their share with Nepal.

Himalayas	total number of the Himalayan species		Himalayan species also distributed in the Oriental region		Share of the Himalayan species with:					
					Western Nepal		Central Nepal		total Nepal	
	No	%	No	%	No	%	No	%	No	%
Western Himalaya	43	26,1	12	27,9	6	14,0	13	30,2	15	34,9
Eastern Himalaya	36	21,8	17	47,2	7	19,4	25	69,4	26	72,2
Tibet-Transhimalaya	15	9,1	—	—	1	6,7	3	20,0	3	20,0
Central-Nepal Himalaya	71	43,0	26	36,6	8	11,3	71	100,0	77	108,5
	165									

2.1.1. The Western Himalaya

It extends from the Indus valley in the west to the Kali Gandaki river in the east and includes the Punjab Himalaya, the Kumaon Himalaya and the Western Nepal-Himalaya. The slopes of Kali Gandaki canyon between the Dhaulagiri and Annapurna massifs on the Nepal territory, constitute natural geological sections across the structures of the mountains. There are 43 species hitherto identified, representing about 26,1% of the total Himalayan fauna. The Oriental element represents 27,9% of the Western Himalayan fauna and comprises species shared with other parts of the Himalayas. About 15 Oriental and all-Himalayan species are common to the Western Himalaya and Nepal. The remaining bulk contains species restricted to the area (*Aphodius kashmirensis* Sharp, *A. himalayanus* Kosh., *Aegialia petrovitzi* Stebn., the flightless *Aphodius mabriensis* Stebn., *A. zojilae* Stebn.) and the species common to Central Asia, Tibet and Europe as well, however, their number is extremely low. It is interesting to note, that the numerous West-Hima-

layan species belong to the subgeneric groups widely distributed in Palaearctica, such as *Agolius*, *Phalacrothothus*, *Bodilus*, *Esymus*, *Cinacanthus*, the members of which have not so far been found in the rest of the Himalayas.

Biogeographically, the Western Himalaya is separated from the Central-Eastern area. The available data indicate that the endemic species are the descendants of the ancestral forms mostly of Irano-Turanian and Central-Asiatic origin, which most probably inhabited the area when its elevation was not high. The Indo-Malayan elements in a small proportion represent ecologically transitional forms and appear to be comparatively recent intrusions from the plains up to the outer ranges and by way of valleys.

2.1.2. The Eastern Himalaya

It extends from the Teesta river in the west to the Brahmaputra gorge in the east and includes Sikkim, Bhutan and Assam Himalaya. The fauna of this area is poorly known. The majority of reports concern Bhutan, Darjeeling and Sikkim, while the eastern territory of the Assam Himalaya has not been explored. Of the total number of 36 recorded species representing about 21,8% of the Himalayan fauna, 26 species are occurring in Nepal and few of them are also occurring in the Western Himalaya. The Oriental element represents 47,2% of the total East-Himalayan fauna and comprises nearly all species shared with Nepal. About 8 species are known exclusively from Sikkim or from Bhutan (*Aegialia himalayana* Petr., *Ae. gogona* Stebn., *Aphodius wittmeri* Petr., *A. sikkimensis* Balth., *A. khandui* Stebn.) and seem to be restricted to the area except a couple of species that may be found in Nepal in the future. The faunas of the Eastern Himalaya and the Central-Nepal Himalaya are similar. The main differences lie in the composition of local endemic faunas and in the number of species which occur in the mountainous area of Indochina and China. Some of these species extend westwards into the Eastern Himalaya, but apparently not into Nepal. The principal component elements of the high altitude fauna of both the Central and Eastern Himalayas have had a wholly different history from those of the Western Himalaya, and here it may be observed unmistakable evidence of a comparable origin and evolution of species from the Indo-Malayan and Japano-Chinese ancestral forms.

2.1.3. The Tibetan Himalaya (Transhimalaya)

It contains the mountain ranges between the margin of the Tibetan Highland and the northern slopes of the main crest of the Great Himalaya, and represents the oldest orographic pattern of the Himalayan system. The fauna of the Tibet-Transhimalaya is practically unknown. The number of 15 recorded species represents 9,1% of the total Himalayan fauna. There seems to be no resemblance between the Tibetan and Indo-Malayan Aphodiinae. Except three species shared with Central Nepal (*Aphodius irregularis* Westw., *A. holdereri* Reitt., *A. eberti* Balth.) and one species in common with Western Nepal (*Aphodius ritsemai* A. Schm.), the remaining species of Aphodiinae found in the Tibetan Himalaya appear to be restricted to the area of Tibet which belongs to the Palearctic Region.

2.2. Vertical distribution in the Nepal-Himalayas

The Central Himalaya is located between the rivers Kali Gandaki in the west and Teesta in the east. The richest fauna is in the wetter area to the east of the country, and it becomes

Table 2. Hypsometric analysis of Aphodiinae from Nepal.

Altitude zones	total number of species		Himalayan species		Species restricted to Nepal		Widespread species		
	No	%	No	%	No	%	Oriental		No
							No	%	
to 1000 m	31	22,1	5	16,1	7	22,6	18	58,1	1
> 1000—2400 m	40	28,6	13	32,5	11	27,5	16	40,0	—
> 2400—3100 m	26	18,6	11	42,3	7	26,9	8	30,8	—
> 3100—3600 m	19	13,6	8	42,1	7	36,8	3	15,8	1
> 3600—4200 m	18	12,8	6	33,3	11	61,1	1	5,6	—
> 4200—5000 m	6	4,3	2	33,3	4	66,7	—	—	—
	140								

progressively poorer towards the drier parts of the Western Himalaya. The increasing aridity westwards greatly influences the compositions of Aphodiinae, however, the western part of Nepal is less thoroughly surveyed than the central territory (map, see fig. 99), enclosing the Indo-Gangetic Plain and the mountain ranges of Siwalik, Lesser Himalaya (Mahabharath Lakh) and the Great Himalaya.

The hypsometric analysis of the Aphodiinae from Nepal is shown in a schematic manner in table 2. The percentage indicate how many species are to be found at each altitude zone and how many all-Himalayan, Nepalese and Indochinese species occur in a given zone. A general vegetational character of the altitude zones (according to DANIEL 1974, conditions of the Nepal-Himalaya) and the distribution of species are summarized as follows.

2.2.1. Altitude to 1000 m above sea level

A zone of tropical dry caducous forest with the outstanding species *Shorea robusta*. The zone is dominated by widely distributed Indian and Indo-Malayan species of Aphodiinae, representing 58,1% of the total fauna of Nepal, with characteristic species *Aphodius wrosthigma* Har., *A. crenatus* Har., *A. lewisi* Waterh., *A. rangoonensis* Petr., and with the Sundean genus *Cnematoplatys* A. Schm. The remaining bulk contains species that are known so far only from Nepal or are in common with the Eastern Himalaya. A cosmopolitan element is represented by one species, *Aphodius lividus* (Oliv.).

2.2.2. Altitude from > 1000 to 2400 m

A zone of evergreen forest on shadowed slopes (*Acer*, *Alnus*, *Fraxinus*, *Querceta* sp.) with pine woods of *Pinus roxburghii* on sunlit slopes and with arborescent *Rhododendron arboreum* above 1500 m, also the main zone of agriculture. A largest number of 40 species has been found within the limits of this zone with a small superiority of widely distributed Oriental species (*Aphodius nigrovirgatus* A. Schm., *A. andrewesi* A. Schm., *A. haafi* Petr.). The Himalayan species shared with Nepal (*Aphodius palea* Balth., *A. ramamiensis* Stebn., *A. teyrovskyi* Balth.) occupy the second place in order of abundance (32,5%); the species confined to Nepal (*Aphodius nepalensis* Balth., *A. redargutus* Balth., *A. murensis*

Stebn., *Oxyomus arunae* Stebn.) represent 27,5% of the total number. The zone seems to be a meeting point of the tropical and high altitude elements and a measure of the maximum frequency of occurrence of the largest number of species.

2.2.3. Altitude from > 2400 to 3100 m

A zone of lower stage of tropical evergreen upper mountain forest with numerous species of oaks and epiphytes. There is marked a rapid fall in abundance of species representing 18,6% of the total number. As compared to the second zone, the species restricted to Nepal do not show a significant change in abundance (characteristic species: *Aphodius jubingensis* Balth., *A. phulcokiensis* Stebn., *Aegialia wittmeri* Stebn.), however, the first place is taken up by the typical Himalayan species (*A. eberti* Balth., *Oxyomus nubigenus* Petr.). The widely distributed Oriental species are less abundant (30,8%) than in the second zone.

2.2.4. Altitude from > 3100 to 3600 m

The higher stage of tropical evergreen upper mountain forest, zone of conifers with rhododendrons (*Abies spectabilis*, *Rhododendron arboreum*); a limit line of stable human settlements. The species shared with the rest of the Himalayas, representing 42,1%, occupy a first place in order of abundance, but there is a pronounced increase in the percentage (36,8%) of species restricted to Nepal (*Aphodius dierli* Balth., *A. decoctor* Balth., *A. bagmatiensis* Stebn.). A comparatively small percentage (15,8%) of the widespread Oriental species represents incursions from lower elevations. In this zone one Palearctic species occurs (*Aphodius fimetarius* L.).

2.2.5. Altitude from > 3600 to 4200 m

A zone of subalpine forest with birches (*Betula utilis*), firs (*Abies spectabilis*) and rhododendrons (*Rhododendron campanulatum* and many others). About 61,1% of the species found in this zone are confined to Nepal (*Aphodius jacksoni* Petr., *A. decoctor* Balth., *A. yangricus* Stebn., *A. langtangicus* Stebn.), and there are marked undoubted affinities to the Japano-Central Chinese forms. The Himalayan species shared with Nepal represent 33,3%, the Oriental element seems to be exceedingly rare (5,6%).

2.2.6. Altitude from > 4200 to 5000 m

A zone of humid alpine meadows and shrubs (*Juniperus*, *Lonicera*, *Rhododendron* sp.); the limit line of summer pastures and seasonal human settlements. From above the forest line the impoverishment of the species is rapid and there are 6 species representing boreal elements (*Aphodius montisamator* Balth., *A. monicae* Stebn.) and the subgeneric group *Paremadus* Nak. of Japano-Chinese origin. So we see, that in the subalpine and alpine tiers of vegetation local species prevail and the number of foreign penetrating species is particularly small.

Over 5200 m above sea level is the end of continuous vegetation cover, and only sporadic flowering plants appear in the proximity of the snow line. Material from this altitude is lacking.

2.3. Conclusions

The analysis of the present-day fauna of Aphodiinae of the Nepal-Himalaya leads to following conclusions.

The factors governing the actual distribution of various species of Aphodiinae are mainly of a climatic and microclimatic character. In dependence of the differences in exposure of the slopes and their mesoclimate, the ecological limits of the Himalayan biosphere show a very irregular course. The influence of altitude on the distribution is characterized by the progressive fall in the abundance of species with increase of elevation, and by replacement of forms characteristic of a given altitude by others. Exceedingly few species occur over a wide range of elevations, for example *Aphodius nepalensis* Balth. (350—4000 m), *A. jirianus* Balth. (170—5000 m), *A. gregori* Balth. (150—3800 m).

Considering the general features of the species restricted to the area of Nepal, I find that above the altitude of 3600 m, the species of Indo-Malayan resemblances are successively replaced by the species closely related to the Японо-Chinese and all-Palearctic forms. There seems to be evidence that the southern slopes of elevation to 3600 m (on average) belong to the Oriental zone, those of higher altitudes to the Palearctic zone dominating the whole Tibetan Himalaya. Comparative studies of morphology and distribution of species show that the fundamental elements of Aphodiinae fauna of Nepal may be classified into three groups.

2.3.1. Indian and Indo-Malayan species

They penetrate deep through the river valleys in recent times. (The representatives of characteristic subgeneric groups of *Aphodius*: *Trichaphodius* A. Schm., *Pharaphodius* Reitt., *Pleurophodius* A. Schm., *Aganocrossus* Reitt., *Paradidactylia* Balth., *Koshantschikovius* A. Schm.)

2.3.2. Himalayan and Tibetan endemic species

These species originated in the various areas of the mountain system and are characterized by subsequent expansion into surrounding territories, on peaks and slopes of adequate conditions. (The members of characteristic subgeneric groups of *Aphodius*: *Platyderides* A. Schm., *Acrossus* Muls., *Alocoderus* A. Schm., *Loboparius* A. Schm., *Plagiogonus* Muls., and of the genus *Oxyomus* Steph.)

2.3.3. Central Himalayan endemic species

They evolved from the Indo-Malayan and Японо-Chinese ancestral forms representing most likely a progressive, post-Miocene colonization from outside the actual area of uplift of the mountains. (The *Aphodius*-species of Indo-Malayan origin, belonging to the subgeneric groups: *Pharaphodius* Reitt., *Trichaphodius* A. Schm., *Paulianellus* Balth., and the species of the Sundean genus *Cnematoplatys* A. Schm. — The species of Японо-Chinese origin, belonging to the subgeneric groups of *Aphodius*: *Paremadus* Nak., *Carinaulus* Tes. and to the genus *Aegialia* Latr., subgenus *Silluvia* Land. — The species of all-Palearctic origin, belonging to the subgeneric groups of *Aphodius*: *Acrossus* Muls., *Agrilinus* Muls., *Pseudacrossus* Reitt.)

The present knowledge of the composition and general distribution of aphodiid beetles of East Asia is still insufficient to explain their possible historical biogeography and to fix the date of their appearance in Nepal.

3. List of the species (localities on map, fig. 99)

3.1. *Aphodius* including keys in most of the subgenera

3.1.1. *Aphodius* (*Teuchestes*) *analis* (Fabricius, 1787)

1787 *Scarabaeus analis* Fabricius, Mant. Inst., I: 18.

1792 *Scarabaeus sorex* Fabricius, Ent. Syst., 1: 23.

1862 *Aphodius sorex* var. *analis*, — Harold, Berl. ent. Z., 6: 167.

1892 *Aphodius* (*Teuchestes*) *sorex* var. *analis*, — Reitter, Verh. naturw. Ver. Brünn, 30: 179, et Auct.

1983 *Aphodius* (*Teuchestes*) *analis*, — Dellacasa & Johnson, Revue suisse Zool., 90: 522—523, figs. 4, 11, 30—35.

Material: W Nepal, Dailekh (river), 650 m, 24. III. 1980, 1 ex. (MHNG), leg. LÖBL & SMETANA.

Remarks: This species hitherto known from Vietnam, Laos, China, Japan and India is recorded from Nepal for the first time. It has been redescribed and illustrated by DELLACASA & JOHNSON (1983).

3.1.2. *Aphodius* (*Pleuraphodius*) *lewisi* Waterhouse, 1875

1875 *Aphodius lewisi* Waterhouse, Trans. r. ent. Soc. Lond., 1: 92.

1913 *Aphodius* (*Pleuraphodius*) *lewisi*, — A. Schmidt, Arch. Naturg., 79A: 121, et Auct.

1980 *Aphodius* (*Pleuraphodius*) *lewisi*, — Stebnicka, Acta zool. cracov. 24: 234—235, fig. 64.

Material: Lothar near Birganj, 200 m, 29. VIII., 5.—19. IX. 1967, Kathmandu Distr., Godawari, 1600 m, 5.—7. VIII. 1967, 10 ex. (BRIO), leg. Can. Nep. Exp.

Remarks: Widespread species throughout the Oriental Region, occurs in Indonesia, China, Japan, Korea and India. New to Nepal.

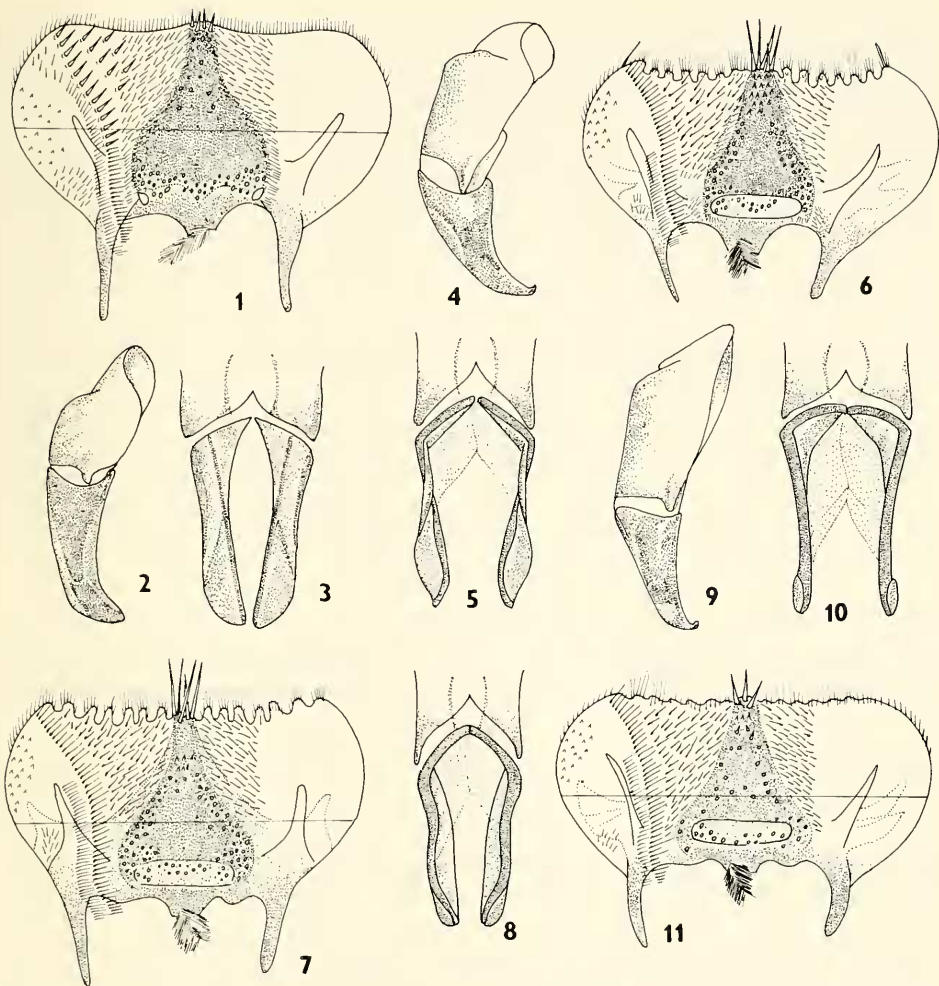
3.1.3. *Aphodius* (*Carinaulus*) *dierli* Balthasar, 1967 (figs. 1—3)

1967 *Aphodius* (*Carinaulus*) *dierli* Balthasar, Acta ent. bohemoslov., 64: 123—125, fig. 2.

Material: Prov. Bagmati, below Thare Pati, 3300 m, 12. IV. 1981, 1 ex. (MHNG), leg. LÖBL & SMETANA. — Vicinity of Dhading, 1500—2000 m, 21. V. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: The epipharyngeal bristles of chaetoparia and 8—9 bristles of chaetopodium the same length and thickness; the remaining setae of pedium thin, somewhat shorter than those of chaetoparia. Acroparia with short, equal setae.

Remarks: This species was recorded only from Nepal — Khumjung, Thame, 3800 m (STEBNICKA, 1981a). The two remaining species of the subgenus *Carinaulus* Tes. are known from China (Szechwan, Fukien).



- Figs. 1—3. *Aphodius (Carinaulus) dierli* Balth. — 1. epipharynx; — 2—3. aedeagus (lateral and dorsal view).
 Figs. 4—6. *Aphodius (Pharaphodius) marginellus* (F.) — 4—5. aedeagus (lateral and dorsal view); — 6. epipharynx.
 Figs. 7—9. *Aphodius (Pharaphodius) priscus* Motsch. — 7. epipharynx; — 8—9. aedeagus (dorsal and lateral view).
 Figs. 10—11. *Aphodius (Pharaphodius) redargutus* Balth. — 10. aedeagus (dorsal view); — 11. epipharynx.

3.1.4. *Aphodius (Loboparius) immarginatus* A. Schmidt, 1907

1907 *Aphodius (Ammonoecius) immarginatus* A. Schmidt, Dt. Ent. Z.: 201.

1921 *Aphodius (Loboparius) vitalisi* Boucomont & Gillet, Faune ent. Ind. Franç., Scarab.: 62.

1983 *Aphodius (Loboparius) immarginatus*, — Dellacasa, Ann. Mus. civ. stor. nat. Giacomo Doria, 84: 254—256, figs. 6—9.

Material: Prov. Bagmati, Kakani, 2200 m, 27. IV. 1981, Kathmandu Distr., Godawari, 1600 m, 31. III. 1984, 9 ex. (MHNG), leg. LÖBL. — Chaubas, 2500 m, 4. IV. 1981, NE

Barabhise, Jangtang Ridge, 3300 m, 2.—6. V. 1981, Khandbari Distr., Pangma, 1900 m, 24. III. 1982, 9 ex. (CH), leg. LÖBL & SMETANA. — Khandbari Distr., Arunthan, 1100—1300 m, 29. V. 1983, 2 ex. (NHMB), leg. BRANCUCCI. — Kathmandu Distr., Manche Danda, 1600 m, oak forest, 9. V. 1967, 1 ex. (BRIO), leg. Can. Nep. Exp. — Rara Ridge, vicinity of Pina, 3000 m, IX.—X. 1972, 1 ex. (CF), leg. FRANZ.

Remarks: The general range of this species includes the mountains of the Oriental Region. It has been recorded from Laos, Vietnam, Burma, India, Sikkim and Nepal.

3.1.5. *Aphodius (Loboparius) scheibei* Balthasar, 1955

1955 *Aphodius (Loboparius) scheibei* Balthasar, Sb. ent. Odd. nár. Mus. Praze, 30: 419.

1983 *Aphodius (Loboparius) scheibei*, — Dellacasa, Ann. Mus. civ. stor. nat. Giacomo Doria, 84: 262—263, figs, 34—37.

Material: W Nepal, Dailekh, 650 m, 24. III. 1980, 4 ex. (MHNG), leg. LÖBL. — Prov. Bagmati, NE Barabhise, Jangtang Ridge, 2500—3300 m, 2.—6. V. 1981, 2 ex. (CH), leg. LÖBL & SMETANA.

Remarks: This species is known so far from Afghanistan, W Pakistan and Sikkim, to me also from India-Darjeeling. In Nepal it is indicated for the first time.

3.1.6. *Aphodius (Loboparius) schereri* Petrovitz, 1963

1963 *Aphodius (Loboparius) schereri* Petrovitz, Ent. Arb. Mus. Frey, 14: 630.

1983 *Aphodius (Loboparius) schereri*, — Dellacasa, Ann. Mus. civ. stor. nat. Giacomo Doria, 84: 263—264, figs. 26—29.

Material: W Nepal, Rara Ridge, vicinity of Pina, 3000 m, 29. IX.—1. X. 1972, 1 ex. (CF), leg. FRANZ.

Remarks: The species is known from India, W Pakistan and Nepal. Detailed, illustrated redescriptions of the *Loboparius*-species listed above have been given by DELLACASA (1983).

3.1.7. *Aphodius (Loboparius) dunchensis* Stebnicka, 1982

1982 *Aphodius (Loboparius) dunchensis* Stebnicka, Bull. Acad. Pol. Sci., Sér. Sci. biol., 29: 333—334, figs. 1—3.

Remarks: This species is only known from the type-locality (Nepal, Dhunche, 1700—1900 m); since the original description no additional specimens were found. It can be easily differentiated from other *Loboparius*-species existing in Nepal by the characters proposed in the key.

Key to the Nepalese species of the subgenus *Loboparius* A. Schm.

- 1 Sides of clypeus very strongly emarginate before genae 2
- Sides of clypeus weakly emarginate before genae 3
- 2 Base of pronotum not bordered with a row of more or less close punctures along margin. The punctures on the disc of pronotum mixed very fine and large, the latter separated by their diameter. Elytra black or dark brown, humeral tubers and apical declivity sometimes lighter *A. (L.) immarginatus*
- Base of pronotum distinctly, often strongly bordered with a row of contiguous punctures along margin. The punctures on the disc of pronotum mixed very fine and large, the latter

separated by less than their diameter. Elytra reddish brown, usually darkened on the disc, base and apical declivity lighter. *A. (L.) scheiberi*

3 The punctures of the head coarse, nearly rugose anteriorly, genae right-angled. Base of pronotum not bordered with a row of nearly contiguous punctures along margin; the discal punctures mixed fine and large, the latter separated by their diameter or less. Elytral intervals distinctly punctate, weakly convex or flat from base to apex *A. (L.) schereri*

— The punctures of the head moderately coarse, closer anteriorly and slightly wrinkled, genae rounded. Base of pronotum not bordered with a row of well separated, large punctures along margin; the discal punctures mixed fine and large, the latter separated by more than their diameter. Elytral intervals minutely punctate, strongly convex from base to apex *A. (L.) dunchensis*.

3.1.8. *Aphodius (Pharaphodius) marginellus* (Fabricius, 1781) (figs. 4—6)

1781 *Scarabaeus marginellus* Fabricius, Spec. Ins., I: 21.

1862 *Aphodius marginellus*, — Harold, Berl. ent. Z., 6: 141, 146.

1913 *Aphodius (Pharaphodius) marginellus*, — A. Schmidt, Arch. Naturg., 79 A: 125, et Auct.

1933 *Aphodius (Pharaphodius) attritus* Balthasar, Ent. NachrBl., 7: 55, [n. syn.].

1956 *Aphodius marginellus*, — Landin, Opusc. ent., 21: 218.

1961 *Aphodius (Pharaphodius) marginellus*, — Petrovitz, Ent. Arb. Mus. Frey, 12: 99—100, fig. 1.

Material: Prov. Bagmati, NE Barahbise, 2500 m, 2. V. 1981, Jangtang Ridge, NE Barahbise, 3300 m, 4—6. V. 1981, 2 ex. (CH), leg. LÖBL & SMETANA. — Sarankot, 3000 m, 17. IX. 1981, Kathmandu, 1400 m, 29. VIII. 1981, 5 ex. (ISEZ), leg. PAWŁOWSKI. — Adhabhar near Simra, 200 m, 23.—27. VIII. 1967, Kathmandu Distr., Godawari, 1600 m, 8. VIII. 1967, Lothar near Birganj, 170 m, 30.—31. VIII., 14. IX. 1967, 39 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Length 5.5—7.5 mm. Epipharyngeal acroparia of undulate line; the bristles of chaetoparia rather thin, those of chaetopodium mixed longer and shorter.

Remarks: As stated in connection with the present study, the species occurs in Nepal, Bhutan, India, China, Vietnam, Thailand, Java and Bali. Recorded from Nepal (Kathmandu Distr., Godawari, 1600 m) and from Bhutan by STEBNICKA (1981 a). Indicated in Nepal (Indrawati Khola, Saretar, 1700 m) by BALTHASAR (1965) under the name *Aphodius (Pharaphodius) attritus*, however, I have not seen this material lacking in the collection of ZSM. The holotype of *A. attritus* (type-locality: China, Yunnan) has been studied during my stay in Prague in 1973.

A. marginellus sensu lato has always been considered a species having a wide distribution embracing India, China, Indochina, Indonesia and Australian Region. Although known for a long time and widely distributed in the Oriental Region, its identity was uncertain, because of relevant variability in outer morphology often correlated with geographical distribution. PETROVITZ (1961: 99—101) deals with *marginellus* problem and recognizes three valid species, the Indo-Malayan *Aphodius marginellus*, *A. priscus*, and the Indonesian *A. diadema*, basing this separation on differences in the shape of male genitalia, in the size and colour. I have studied a large series of specimens of *A. marginellus* sensu lato. My observations confirm PETROVITZ' views with respect to the characters of male genitalia, but they also revealed additional, apparently constant characters in the shape of the head and in the facies of epipharynx as well. On the other hand, no morphological differences could be correlated with the colour variation. There is no doubt about the taxonomic validity of these two species separated from *A. marginellus*, characterized by very advanced variation. *A. marginellus* and *A. priscus* occur in Nepal, while *A. diadema* is known only from Java.

3.1.9. *Aphodius (Pharaphodius) priscus* Motschulsky, 1858 (figs. 7—9)

1858 *Aphodius priscus* Motschulsky, Étud. Ent., 7: 56.

1862 *Aphodius marginellus* var. *priscus* Harold, Berl. ent. Z., 6: 146, et Auct.

1922 *Aphodius (Pharaphodius) marginellus priscus* A. Schmidt, Aphodiinae in: Tierreich, 45: 63.

1961 *Aphodius (Pharaphodius) priscus*, — Petrovitz, Ent. Arb. Mus. Frey, 12: 99—100, fig. 3.

Material: Kathmandu, 1400 m, 29. VIII. 1981, 2 ex. (ISEZ), leg. PAWŁOWSKI. — Lothar near Birganj, 170 m, 12. IX. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Length 4.5—6.0 mm. Epipharynx similar to epipharynx of *A. marginellus*; the differences are visible in the shape of epitormal sclerome.

Remarks: As stated in connection with the present study, the area of distribution of this species includes Vietnam, Thailand and Nepal — new record.

3.1.10. *Aphodius (Pharaphodius) redargutus* Balthasar, 1971 (figs. 10—11)

1971 *Aphodius (Pharaphodius) redargutus* Balthasar, Ent. Bl. Biol. Syst. Käfer, 66: 153.

Material: Holotype male and 4 paratypes, — Nepal, Kathmandu Distr. Chauni, 1400 m, (ZSM). — Kathmandu, 1400 m, 29. VIII. 1981, 2 ex. (ISEZ), leg. KUSKA.

Complementary description: Length 6.0—7.5 mm. The line of epipharyngeal acroparia less undulate than in *A. marginellus* and *A. priscus*, the bristles of corypha shorter and thinner. The setae of acroparia thicker than the remained.

Remarks: This species is known so far only from Nepal. *A. redargutus* and the two forenamed species constitute a group of very closely related species differing by the characters given in the key and by the shape of the male genitalia.

3.1.11. *Aphodius (Pharaphodius) orientalis* Harold, 1862 (figs. 14—15)

1862 *Aphodius orientalis* Harold, Berl. ent. Z., 6: 147.

1913 *Aphodius (Pharaphodius) orientalis*, — A. Schmidt, Arch. Naturg. 79A: 125, et Auct.

Material: Gorapani Pass, Pun Hill, 3050—3100 m, 8. X. 1983, 1 ex. (CH), leg. SMETANA.

Complementary description: Shape of epipharynx similar to that of *A. marginellus*; the bristles of chaetopodium thicker than those of chaetoparia, gradually decreasing in size towards epitorma.

Remarks: Widespread species, occurs in Indonesia, Indochina, Taiwan and China. New to Nepal, represented by a single specimen.

3.1.12. *Aphodius (Pharaphodius) costatulus* A. Schmidt, 1908

1908 *Aphodius costatulus* A. Schmidt, Ent. Wochenbl., 25: 47.

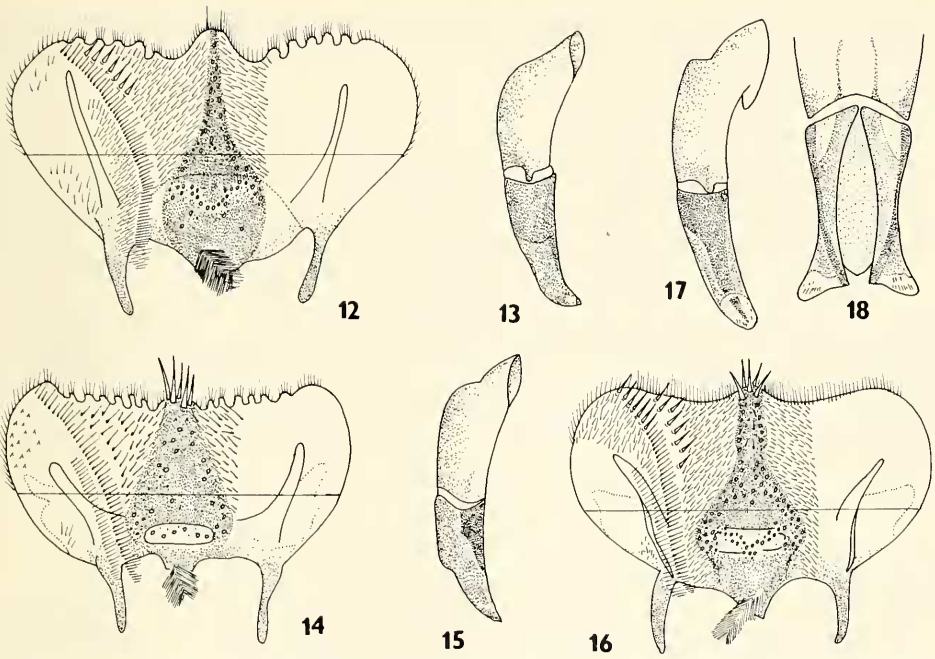
1913 *Aphodius (Trichaphodius) costatulus* A. Schmidt, Arch. Naturg., 79A: 136, et Auct.

1941 *Aphodius (Pharaphodius) dindigalensis* Balthasar, Mitt. Münch. ent. Ges., 31: 179—180, (female), [n. syn.].

1965 *Aphodius (Pharaphodius) subpilosus* Petrovitz, Mitt. Zool. Mus. Berlin, 41: 163—164.

1985 *Aphodius (Trichaphodius) costatulus*, — Stebnicka, Revue suisse Zool., 92: 363—364, figs. 11—13.

Material: Holotype female, of *subpilosus*, — India, Kistna (MHNG). — Nuwakot Distr., Trisuli, 600—650 m, 21—22. VII. 1983, 1 ex. (SMNS), leg. MARTENS & SCHAWALLER.



Figs. 12—13. *Aphodius (Pharaphodius) calo* Balth. — 12. epipharynx; — 13. aedeagus (lateral view).
 Figs. 14—15. *Aphodius (Pharaphodius) orientalis* Har. — 14. epipharynx; — 15. aedeagus (lateral view).
 Figs. 16—18. *Aphodius (Pharaphodius) crenatus* Har. — 16. epipharynx; — 17—18. aedeagus (lateral and dorsal view).

— Jhapa Distr., Karkabita, 170 m, 2. IV. 1980, 1 es. (SMF), leg. MARTENS & AUSOBSKY. — Cobhar, 5 km S Kathmandu, 1370 m, 13. IX. 1983, 9 ex. (CH), leg. SMETANA. — Lamjung Distr., Besisahar, 900 m, 17. X. 1983, Kosi, Kuwapani-Chichila, 2100—2300 m, 6 ex. (MHNG), leg. LÖBL & SMETANA. — Adhabhar near Simra, 200 m, 23—27. VIII. 1967, Kathmandu Distr., Godawari, 1600 m, 15. VIII. 1967, 105 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal acroparia of undulate line. The bristles of chaetoparia rather short and thin, the numerous bristles of chaetopedium and dense setae of pedium gradually decreasing in size toward crepis.

The species is characterized by a considerable individual variability respecting the body shape, colour, punctuation and pubescence of elytra, as well as by rather advanced sexual dimorphism (STEBNICKA, 1985).

Remarks: The species has been described for the second time under the name *A. dindigalensis* (type-locality: India, Dindigal) on the base of a single female specimen, and subsequently recorded from Nepal by BALTHASAR (1964). *A. costatulus* is widely distributed in Oriental Region, occurs in Thailand, Vietnam, Burma, India, Bhutan and Nepal. Recorded from Nepal — Kathmandu, Cobhar, 1370 m, by STEBNICKA (1981a, 1985). As a result of the examination of numerous species from various subgenera forming a heterogenous assemblage of several phyletic lineages, *A. costatulus* seems to be closest to the species of group I of *Pharaphodius*, separated in the key. Placement of this species in the existing subgeneric classification is difficult, because it possesses characteristics of the two

subgenera together. The features of such species, that do not fit satisfactorily into any of the definite subgenera are, however, of use for separation of the more homogenous groups of species within extant subgenera.

3.1.13. *Aphodius (Pharaphodius) calo* Balthasar, 1971 (figs. 12—13)

1971 *Aphodius (Pharaphodius) calo* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 4: 17—18, fig. 1.

Material: Lothar near Birganj, 170 m, 14. IX. 1967, 1 ex. ♂ (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal acroparia of undulate line; 7—8 bristles of chaetopodium thicker and shorter than those of chaetoparia; the thin setae of pedium shorter than the remaining.

Remarks: This apparently rare species is known only from Nepal (Rapti valley, Jhawani, 200 m).

3.1.14. *Aphodius (Pharaphodius) crenatus* Harold, 1862 (figs. 16—18)

1862 *Aphodius crenatus* Harold, Berl. ent. Z., 6: 141—142.

1913 *Aphodius (Pharaphodius) crenatus*, — A. Schmidt. Arch. Naturg., 79A: 124, et Auct.

Material: Gorkha Distr., Darondi Khola near Barpak, 900—1100 m, 12. VIII. 1983, 1 ex. (SMNS), leg. MARTENS & SCHAWALLER. — Lothar near Birganj, 170 m, 14. IX. 1967, Adhabhar near Simra, 200 m, 27. VIII. 1967, 3 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal acroparia of straight line, the bristles of chaetoparia gradually decreasing in size toward crepis; 8—10 bristles of chaetopodium the same size as the initial bristles of chaetoparia, the remaining setae short and thin.

Remarks: Widespread species throughout Oriental Region, known from Indonesia, Philippines, Indochina, China, Ceylon and India. New to Nepal.

3.1.15. *Aphodius (Pharaphodius) robustus* Walker, 1858

1858 *Aphodius robustus* Walker, Ann. Mag. Nat. Hist., 3: 207.

1977 *Aphodius (Pharaphodius) robustus*, — Dellacasa, Ann. Mus. civ. stor. nat. Giacomo Doria, 81: 316, figs. 11—14.

Material: W Nepal, Dailekh (river), 650 m, 23. III. 1980, 5 ex. (MHNG), leg. LÖBL. — Adhabhar near Simra, 200 m, 27. VIII. 1967, 4 ex. (BRIO), leg. Can. Nep. Exp.

Remarks: This species distributed in Afghanistan, Pakistan, India and Ceylon is here recorded from Nepal for the first time. A detailed redescription of *A. robustus* and *A. cornutus* has been given by DELLACASA (1977).

3.1.16. *Aphodius (Pharaphodius) cornutus* Wiedemann, 1823

1823 *Aphodius cornutus* Wiedemann, Zool. Mag., 2: 26.

1977 *Aphodius (Pharaphodius) cornutus*, — Dellacasa, Ann. Mus. civ. stor. nat. Giacomo Doria, 81: 316, 318, figs. 6—10.

Material: Kathmandu, 1400 m, IX. 1975, 2 ex. (CF), leg. FRANZ.

Remarks: The species recorded from India is here indicated in Nepal for the first

time. It is closely related to *A. robustus* and *A. crenatus*, from which it essentially differs by the characters proposed in the key.

Key to the Nepalese species of the subgenus *Pharaphodius* Reitt.

- 1 Head usually with rounded convexity at middle. Frontal suture impressed or faintly elevated without tubercles, anterior edge of clypeus rounded, slightly truncate or faintly emarginate, never denticulate or right-angled each side of median emargination. Elytral striae rather finely punctate, the punctures slightly crenating or not crenating inner margins of the intervals. Intervals from apical declivity of elytra to apex moderately convex, sometimes flat, rarely pubescent. Legs slender, first segment of posterior tarsus long, subequal in length to the next three segments combined. Epipharyngeal acroparia of undulate line (Group I) 2
- Head without rounded convexity at middle. Frontal suture elevated with distinct tubercles or median horn, anterior edge of clypeus clearly emarginate, denticulate or right-angled each side of median emargination. Elytral striae largely and deeply punctate, the punctures more or less strongly crenating inner margins of the intervals. Intervals from apical declivity of elytra to apex always convex, never pubescent. Legs robust, first segment of posterior tarsus short, subequal in length to the next two segments combined. Epipharyngeal acroparia of straight line (Group II). 7
- 2 Base of pronotum margined. Frontal suture faintly elevated. First segment of posterior tarsus a trifle shorter than the next three segments combined, fore tibia of male otherwise shaped than in female. *A. (Ph.) calo*
- Base of pronotum without marginal line. Frontal suture more or less clearly impressed. First segment of posterior tarsus shorter or equal in length to the next three segments combined, fore tibia of males similarly shaped as in females. 3
- 3 Head nearly flat on the middle, surface of the body finely shagreened. Male: elytra piliferous in apical $\frac{2}{3}$, elytral intervals apically flat. Female: elytra piliferous in apical half or only at apex, elytral intervals apically convex *A. (Ph.) costatulus*
- Head with rounded convexity at middle, surface of the body more or less strongly shagreened or shining. Elytra nude, elytral intervals apically convex in both sexes 4
- 4 Body strongly shining, not shagreened. First segment of posterior tarsus shorter than the next three segments combined *A. (Ph.) orientalis*
- Body faintly shining, more or less intensively shagreened. First segment of posterior tarsus and the next three segments combined equal in length 5
- 5 Anterior edge of clypeus rounded or truncate, sides arcuate and not emarginate before genae. Entire surface of the body distinctly shagreened *A. (Ph.) marginellus*
- Anterior edge of clypeus slightly emarginate, sides straight or slightly rounded and somewhat emarginate before genae. Entire surface of the body or a part of the body shagreened. . 6
- 6 Sides of clypeus arcuate toward genae. Entire surface of the body distinctly shagreened or elytra only shagreened. First segment of posterior tarsus a trifle longer than the upper tibial spur *A. (Ph.) priscus*
- Sides of clypeus straight toward genae. Posterior half of pronotum and elytra very finely shagreened. First segment of posterior tarsus and upper tibial spur equal in length. *A. (Ph.) redargutus*
- 7 Anterior edge of clypeus obtusely denticulate each side of median emargination. Clypeal surface very finely and shallowly punctate, or impunctate *A. (Ph.) crenatus*
- Anterior edge of clypeus right-angled or obtusely rounded each side of median emargination. Clypeal surface with larger and closer punctures 8
- 8 Elytral intervals moderately convex, two times as wide as striae near apex. *A. (Ph.) cornutus*
- Elytral intervals strongly convex, as wide as striae near apex. *A. (Ph.) robustus*.

3.1.17. *Aphodius (Pseudacrossus) kuskai* Stebnicka, 1982 (fig. 19)

1982 *Aphodius (Pseudacrossus) kuskai* Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 29: 335—336, figs. 4—5.

Complementary description: Epipharyngeal acroparia with mixed thin and somewhat thicker setae; the bristles of chaetoparia and numerous bristles of chaetopodium moderately long and moderately thick, equal in size. Epitorma very lightly sclerotized.

Remarks: This species is known only from Nepal-Langtang National Park, Laurobinyak, 3850 m. Since the original description of a series of females, no additional specimens were found. Male unknown.

3.1.18. *Aphodius (Pseudacrossus) peculiarator* Balthasar, 1971

1971 *Aphodius (Pseudacrossus) peculiarator* Balthasar, Beitr. Ent., 21: 56—57.

Remarks: The species has been described from Nepal-Kathmandu, Patan, 1400 m, on the base of a single specimen, the sex of which is not recognizable from the accompanying diagnosis. This specimen was not available for examination in connection with the present work and since the original description no additional specimens were found. The characters of this species given in the key are selected from the description.

Key to the Nepalese species of the subgenus *Pseudacrossus* Reitt.

- 1 Frontal suture with small lateral tubercles. Anterior edge of pronotum narrowly bordered, humeri finely denticulate. The very fine strial punctures not crenating inner margins of the intervals. Apical setae of middle and hind tibia equal in length *A. (P.) kuskai*
 — Frontal suture without trace of tubercles. Anterior edge of pronotum not bordered, humeri not denticulate. The strial punctures crenating inner margins of the intervals. Apical setae of middle and hind tibia unequal in length. *A. (P.) peculiarator*.

3.1.19. *Aphodius (Agrilinus) monicae* Stebnicka, 1982 (figs. 20—21)

1982 *Aphodius (Agrilinus) monicae* Stebnicka, Bull. Acad. pol. Sci., Sér. sci. biol., 29: 338—339, figs. 10—12.

Material: Machidoela Pass near Maharigaon, 5000 m, vicinity of Jumla, IX—X. 1971, 2 ex. (CF), leg. FRANZ. — Langtang National Park, Gosainkund-Laurobinyak, 3850 m, 27. IX. 1981, 3 Paratypes (SMNS), 2 Paratypes (SMF), leg. PAWŁOWSKI.

Complementary description: Epipharyngeal epitorma sclerotized; the bristles of chaetoparia moderately long and moderately thick, the numerous bristles of chaetopodium nearly the same size as those of chaetoparia; the remaining setae of pedium thin and scarce.

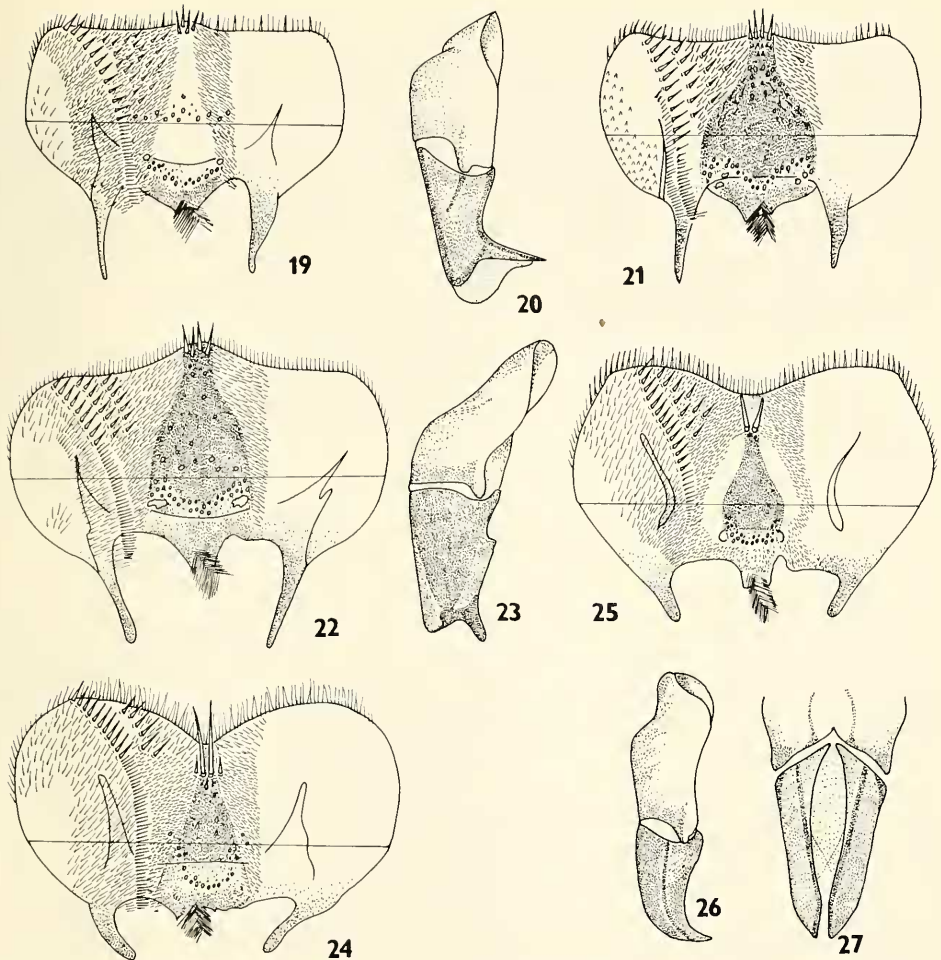
3.1.20. *Aphodius (Agrilinus) montisamator* Balthasar, 1965 (figs. 22—23)

1965 *Aphodius (Agrilinus) montisamator* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 2: 112.

Material: Taplejung Distr., Gunsa, 4270 m, 10. IX. 1983, 1 ex. (SMNS), leg. MARTENS & DAAMS.

Complementary description: Epipharyngeal epitorma sclerotized; the bristles of chaetoparia and chaetopodium equal in size, rather short and thin, the setae of acroparia thin, the same length as those of chaetoparia; the setae of paria and pedium thin, short and dense.

Remarks: This species is known only from Nepal. It has been described on the base of 28 specimens from Khumbu-Lobuche, 4900 m.



- Fig. 19. *Aphodius (Pseudacrossus) kuskai* Stebn., epipharynx.
 Figs. 20—21. *Aphodius (Agrilinus) monicae* Stebn. — 20. aedeagus (lateral view); — 21. epipharynx.
 Figs. 22—23. *Aphodius (Agrilinus) montisamator* Balth. — 22. epipharynx; — 23. aedeagus (lateral view).
 Fig. 24. *Aphodius (Koshantschikovius) andrewesi* A. Schm., epipharynx.
 Figs. 25—27. *Aphodius (Koshantschikovius) bhutanensis* Petr. — 25. epipharynx; — 26—27. aedeagus (lateral and dorsal view).

Key to the Nepalese species of the subgenus *Agrilinus* Muls.

- 1 Body thickset, anterior edge of clypeus right-angled each side of median emargination. Disc of pronotum finely, shallowly and scarcely punctate, the punctures separated by three to five their diameters. Elytra orange or reddish yellow with well delimited, black regular spots. *A. (A.) montisamator*
 — Body oblong oval, anterior edge of clypeus rounded each side of median emargination. Disc of pronotum with mixed fine and moderate punctures closely distributed, separated by one their diameter or less. Elytra yellowish brown, brown or blackish brown without spots *A. (A.) monicae*.

3.1.21. *Aphodius* (s. str.) *fasciger* Harold, 1881

1881 *Aphodius fasciger* Harold, Mitt. Münch. ent. Ver., 5: 89.

1922 *Aphodius* (s. str.) *fasciger*, — A. Schmidt, Aphodiinae, in: Tierreich, 45: 277, et Auct.

Material: Khandbari Distr., NE Kuwapani, 2500 m, 11—15. IV. 1982, 3 ex. (CH), leg. A. & Z. SMETANA. — Gosainkund, 3800 m, 26—27. IX. 1981, 2 ex. (ISEZ), leg. PAWŁOWSKI. — Kosi, vicinity of Num, 1800—2000 m, 23. IV. 1984, Crete NE Mangmaya, 2800 m, 7. IV. 1984, Pangma-Ahale, 1600—2000 m, 4. IV. 1984, Arun river S Num, 1050 m, 22. IV. 1984, Induwa Khola valley, 2000—2600 m, 16—18. IV. 1984, Kuwapani-Chichila, 2100—2300 m, 24. IV. 1984, 48 ex. (MHNG), leg. LÖBL & SMETANA. — Kathmandu Distr., Mamche Danda 2600 m, 9. V. 1967, Patibhanjyang, 2000 m, 12. VI. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp. — Kali Gandaki valley, Kopchepani, 1500—1600 m, 21. V. 1984, leg. RAI. — Bhandar, 2100 m, 26. V. 1979, 4 ex. (NHMB), leg. BHAKTA BAHADUR.

Remarks: A mountainous species widely distributed throughout Indochina and China, recorded from India (Assam, Darjeeling), Sikkim and Bhutan (PETROVITZ, 1975; STEBNICKA, 1981 a). New to Nepal.

3.1.22. *Aphodius* (s. str.) *irregularis* Westwood, 1839

1839 *Aphodius irregularis* Westwood, in: Royle, Illustr. Himalaya, 1: 55, t. 9, fig. 8.

1922 *Aphodius* (s. str.) *irregularis*, — A. Schmidt, Aphodiinae in: Tierreich, 45: 278, et Auct.

Material: Gorkha Distr., Buri Gandaki, Nyak, 2270—2450 m, *Pinus excelsa*, 1. VIII. 1983, 1 ex. (SMNS), leg. MARTENS & SCHAWALLER. — Chordung/Jiri, 2900 m, III. 1973, 3 ex. (SMNS), 3 ex. (SMF), leg. MARTENS. — Thodung, 3200 m, 2—9. IV. 1973, 1 ex. (SMF), leg. MARTENS. — Kosi, Crete NE Mangmaya, 2800 m, 7. IV. 1984, Kathmandu Distr., Godawari, 1600 m, 31. III. 1984, Parbat Distr., Pun Hill at Gorapani Pass, 3050—3100 m, 8. X. 1983, 3 ex. (MHNG), leg. LÖBL & SMETANA. — Prov. Bagmati, Jangtang Ridge NE Barabhise, 3300 m, 4—6. V. 1981, Tarke Ghyang, 2750 m, 19. IV. 1981, below Tarke Ghyang, 2750 m, 19. IV. 1981, Dobate Ridge NE Barabhise, 2800 m, 3. V. 1981, 7 ex. (CH), leg. LÖBL & SMETANA. — Arun river, Mure, 2000 m, 2—8. VI. 1983, 2 ex. (NHMB), leg. BRANCUCCI. — Kathmandu Distr., Bhurumche, 2900 m, oak forest, 10. V. 1967, Patibhanjyang, 2000 m, 2. VI. 1967, Gulubhanjyang, 2800 m, 9. V. 1967, 7 ex. (BRIO), leg. Can. Nep. Exp.

Remarks: A Himalayan species, known from the northern parts of the East Pakistan, India (Darjeeling) and Nepal, recorded by BALTHASAR (1965) from: Kathmandu, 1400 m, Ting Sang La, 3800 m, Thodung, 3100 m, Likhu Khola Valley, 1700 m.

3.1.23. *Aphodius* (s. str.) *fimetarius* (Linnaeus, 1758)

1758 *Scarabaeus fimetarius* Linnaeus, Syst. Nat., I: 348.

1848 *Aphodius fimetarius*, — Erichson, Naturg. Ins. Deutschl., 3: 805.

1892 *Aphodius* (s. str.) *fimetarius*, — Reitter, Verh. naturw. Ver. Brünn, 30: 186, et Auct.

Material: Prov. Bagmati, above Tarke Ghyang, 3300 m, 24. IV. 1981, 1 ex. (CH), leg. LÖBL & SMETANA.

Remarks: Widespread species, occurs in Europe, North Africa, Palearctic Asia except eastern territories and North America. It is indicated in Nepal for the first time. I have examined a series of specimens from India, Kashmir, collected by MARTENS & SCHAWALLER in 1976.

Key to the Nepalese species of the subgenus *Aphodius* s. str.

- 1 Elytra red or blackish red without black fillets and spots *A.* (s. str.) *fimetarius*
 — Elytra yellow or reddish yellow with black fillets and spots 2
 2 Elytra with black fillet situated distinctly at middle of elytra, and with black or brownish spots located at shoulders and before apex. *A.* (s. str.) *irregularis*
 — Elytra with black fillet situated distinctly behind the middle of elytra, and with black or brownish spots at shoulders; sometimes two additional spots before apex of elytra occur, or posterior $\frac{1}{2}$ of elytra entirely black *A.* (s. str.) *fasciger*.

3.1.24. *Aphodius* (*Koshantschikovius*) *andrewesi* A. Schmidt, 1908 (fig. 24)

1908 *Aphodius andrewesi* A. Schmidt, Ent. Wochenbl., 25: 46.

1913 *Aphodius* (*Koshantschikovius*) *andrewesi* A. Schmidt, Arch. Naturg., 79 A: 149, et Auct.

Material: Dhunche, 1700—1900 m, 24. IX. 1981, 2 ex. (ISEZ), leg. PAWŁOWSKI.

Complementary description: Epipharyngeal epitorma lightly sclerotized; the bristles of chaetoparia and thin setae of paria gradually decreasing in size toward crepis; 7—8 bristles of chaetopodium thick, the same length as the initial bristles of chaetoparia.

Remarks: This species known hitherto from a few localities in India is considered as very rare. In Nepal it is indicated for the first time.

3.1.25. *Aphodius* (*Koshantschikovius*) *bhutanensis* Petrovitz, 1975 (fig. 25—27)

1975 *Aphodius* (*Koshantschikovius*) *bhutanensis* Petrovitz, Entom. Basiliensia 1: 217—218.

Material: Holotype male — Bhutan (Paro, 2300 m), (MHNG). — Kathmandu Distr., Godawari, 1600 m, 23. VII—5. VIII. 1967; Adhabhar near Simra, 200 m, 22. VIII. 1967, 20 ex. (BRIO), 1 ex. (SMNS), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal epitorma lightly sclerotized; acroparia with mixed thin setae and thick bristles, the latter the same size as those of chaetoparia; 9—10 bristles of chaetopodium thick, rather short.

Remarks: *A. bhutanensis* may only be confused with *A. andrewesi*, from which it can be distinguished by the shape of male aedeagus and by other characters given in the key. New to Nepal.

Key to the Nepalese species of the subgenus *Koshantschikovius* A. Schm.

- 1 The punctures of the head separated by two to three their diameters, the punctures on the disc of pronotum very fine, toward the sides mixed with somewhat larger punctures. Elytral striae fine, strial punctures very fine, close. *A.* (*K.*) *andrewesi*
 — The punctures of the head separated by one their diameter, the punctures on the disc of pronotum mixed fine and larger, the latter become coarser and closer toward the sides. Elytral striae moderately deep, strial punctures moderately coarse, distant. *A.* (*K.*) *bhutanensis*.

3.1.26. *Aphodius* (*Paradidactylia*) *haafi* Petrovitz, 1961 (fig. 28)

1961 (a) *Aphodius* (*Phalacrothus*?) *haafi* Petrovitz, Ent. Arb. Mus. Frey, 12: 101.

1961 (b) *Aphodius* (*Paradidactylia*) *haafi* Petrovitz, Boll. Soc. ent. Ital., 41: 145.

1964 *Aphodius* (*Phalacrothus*) *haafi*, — Balthasar, Monogr., 3: 325.

1985 *Aphodius* (*Paradidactylia*) *haafi*, — Stebnicka, Revue suisse Zool., 92: 360.

Material: Paratype (sex not recognizable) — Ceylon (MHNG). — Nepal, Dhunche, 1700—1900 m, 2 ex. (ISEZ), leg. KUSKA.

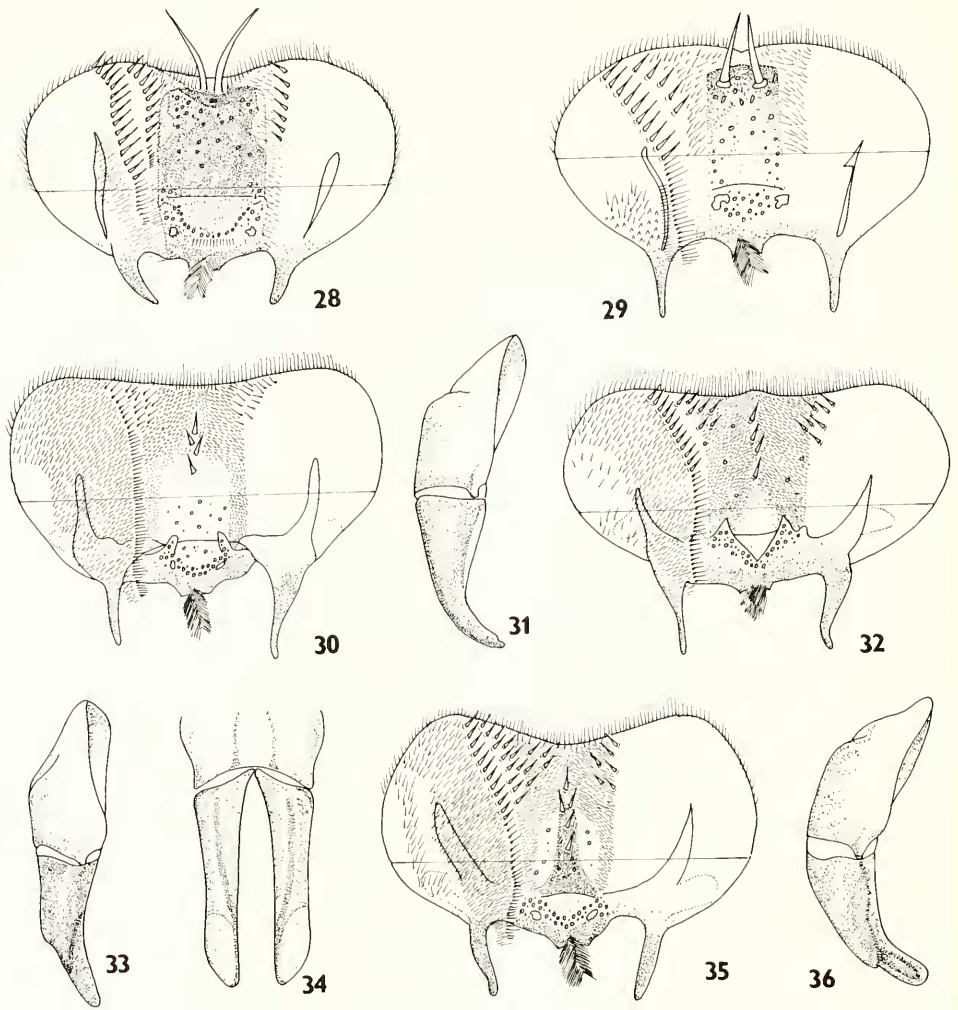


Fig. 28. *Aphodius (Paradidactylia) haafi* Petr., epipharynx.

Fig. 29. *Aphodius (Trichonotulus) castetsi* Paul., epipharynx.

Fig. 30—31. *Aphodius (Acrossus) eberti* Balth. — 30. epipharynx; — 31. aedeagus (lateral view).

Fig. 32—34. *Aphodius (Acrossus) angustiarum* Balth. — 32. epipharynx; — 33—34. aedeagus (lateral and dorsal view).

Figs. 35—36. *Aphodius (Acrossus) jubingensis* Balth. — 35. epipharynx; — 36. aedeagus (lateral view).

Complementary description: Epipharyngeal epitorma wide, strongly sclerotized; the bristles of chaetoparia rather long and thick; the bristles of chaetopodium the same size as those of chaetoparia, occur in a regular row; paria and pedium scarcely setaceous.

Remarks: The species is known from India (Orissa), Ceylon and Karakorum. In Nepal it is indicated for the first time.

3.1.27. *Aphodius (Paradidactylia) kathmandui* Stebnicka, 1985

1985 *Aphodius (Paradidactylia) kathmandui* Stebnicka, Revue suisse Zool., 92: 360—361, figs. 1—3.

Material: Gorkha Distr., Darondi Khola over Barpak, 900—1100 m, 12. VIII. 1983, 2 ex. (SMNS), 2 ex. (SMF), leg. MARTENS & SCHAWALLER. — Adhabhar near Simra, 200 m, 23—27. VIII. 1967, 13 ex. (BRIO), leg. Can. Nep. Exp.

Remarks: The species has been originally described from Nepal, Kathmandu valley, Cobhar, 1300 m.

Key to the Nepalese species of the subgenus *Paradidactylia* Balth.

- 1 Base of pronotum not bordered, crenate by fine punctures, disc with unevenly distributed, rather deep, fine and large punctures, the latter separated by one to three their diameters. Surface of the body shining *A. (P.) haafi*
 — Base of pronotum bordered, not crenate by punctures, disc with unevenly distributed, shallow, minute to fine punctures, the latter separated by one or two their diameter. Surface of the body subopaque. *A. (P.) kathmandui*.

3.1.28. *Aphodius (Trichonotulus) castetsi* Paulian, 1936 (fig. 29)

1936 *Aphodius (Trichonotulus) castetsi* Paulian, Rec. Indian Mus., 38: 363.

1961 *Aphodius (Paradidactylia) echinatus* Petrovitz, Boll. Soc. ent. Ital., 91: 146—147.

1964 *Aphodius (Trichonotulus) castetsi*, — Balthasar, Monogr., 3: 317—318.

1985 *Aphodius (Trichonotulus) castetsi*, — Stebnicka, Revue suisse Zool., 92: 360.

Material: Adhabhar near Simra, 200 m, 27. VIII. 1967, 1 ex. ♀ (BRIO), leg. Can. Nep. Exp.

Complementary description: Head trapezoid, sides of clypeus straight toward right-angled genae. Base of pronotum narrowly bordered by continuous line, posterior angles of pronotum obtusely rounded. The head and pronotum distinctly setaceous. Elytral intervals granulated with a row of yellow, rather thick, erect setae. Transverse ridges of middle and hind tibia faintly marked. Epipharyngeal epitorma lightly sclerotized; the scarce bristles of chaetoparia and chaetopodium moderately long and moderately thick, equal in size; the setae of acroparia thinner, the same length as those of chaetoparia; pedium with shorter, scarce setae.

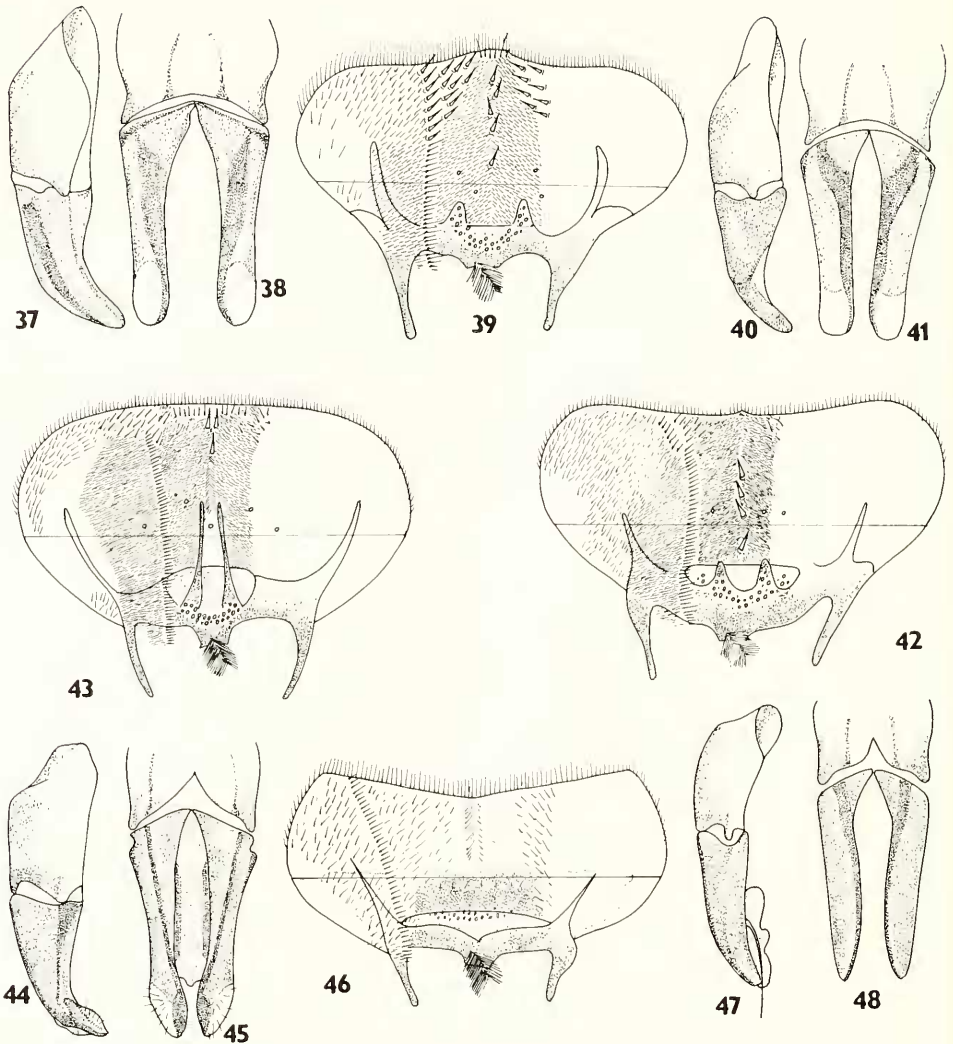
Remarks: The species is known hitherto from India-Bengal, Kistna, Travancore. In Nepal is here indicated for the first time.

3.1.29. *Aphodius (Acrossus) eberti* Balthasar, 1965 [n. comb.] (figs. 30—31)

1965 *Aphodius (Platyderides) eberti* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 2: 108—109.

1976 *Aphodius (Acrossus) thibetanus* Petrovitz, Ent. Bl. Biol. Syst. Käfer, 72: 1—2.

Material: Holotype male and paratypes of *A. eberti* — Nepal, Khumbu, 3900 m; Kathmandu, 1400 m (ZSM). Paratype of *A. thibetanus* — Kashmir, Rotang P. (MHNG). — Nepal, Sinja Khola, Chauta near Neurigad, 2800 m, IX—X. 1971, 1 ex. (CF), leg. FRANZ. — Chitre, Ghat Khola, 2400 m, 26—31. V. 1984, 2 ex. (NHMB), leg. RAI. — Prov. Bagmati, above Shermathang, 2900 m, 26. IV. 1981, Malemchi, 2800 m, 18. IV. 1981, Tarke Ghyang, 3000—3400 m, 20—24. IV. 1981, 12 ex. (MHNG, CH), leg. LÖBL & SMETANA. — Kathmandu Distr., Bhurumche, 3000 m, oak forest, 10. V. 1967, vicinity of Trisuli Bazar, 3300 m, 13. V. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp.



- Figs. 37—39. *Aphodius (Acrossus) emodus* Petr. — 37—38. aedeagus (lateral and dorsal view); — 39. epipharynx.
- Figs. 40—42. *Aphodius (Acrossus) opacipennis* A. Schm. — 40—41. aedeagus (lateral and dorsal view); — 42. epipharynx.
- Figs. 43—45. *Aphodius (Acrossus) ritsemai* A. Schm. — 43. epipharynx; — 44—45. aedeagus (lateral and dorsal view).
- Figs. 46—48. *Aphodius (Platyderides) viturati* Reitt. — 46. epipharynx; — 47—48. aedeagus (lateral and dorsal view).

Complementary description: Epipharyngeal epitorma not sclerotized; the setae of acroparia thin, rather long, those of chaetoparia and chaetopodium thin and short, gradually decreasing in size toward crepis.

Remarks: A Himalayan species, known so far from the Western Himalaya (Kashmir, North Kumaon), Tibet and Nepal. The two Himalayan species, *A. eberti* and *A. angustia-*

rum described by BALTHASAR in the subgenus *Platyderides* A. Schm. belong undoubtedly to the *Acrossus* Muls. The members of the subgenus *Acrossus* distributed in Central and Eastern Himalayas constitute a group of very similar-appearing species that includes *A. emodus*. Although I have seen this species from Bhutan only, I suspect it may occur in Nepal. In order to correct identification of the *Acrossus*-species inhabiting the discussed area, a complementary description of this species is added.

3.1.30. *Aphodius (Acrossus) emodus* Petrovitz, 1976 (figs. 37—39)

1975 *Aphodius (Acrossus) emodus* Petrovitz, Entom. Basiliensia, 1: 217 [nomen nudum].

1976 *Aphodius (Acrossus) emodus* Petrovitz, Ent. Bl. Biol. Syst. Käfer, 72: 4—5.

Material: Paratypes (5) — Bhutan, Tongsa, 2150 m; Sampa Kotoka, 1400—2600 m; Kotoka Gogona, 2600—3400 m (NHMB).

Complementary description: Epipharyngeal epitorma not sclerotized, covered with very short and dense hairs; the setae of acroparia thin and long, 9—10 bristles of chaetopodium the same size as those of chaetopodium.

Remarks: The species originally described in 1976 from Sikkim and Bhutan has been recorded a year earlier from Bhutan. See under *A. eberti*.

3.1.31. *Aphodius (Acrossus) angustiarum* Balthasar, 1967 (figs. 32—34)

1967 *Aphodius (Platyderides) angustiarum* Balthasar, Acta ent. bohemoslov., 64: 125—126, fig. 3.

1970 *Aphodius (Acrossus) simlaicus* Petrovitz, Zeitschr. Arbeitsgem. österr. Entomol., 22: 17—18, [n. syn.].

1976 *Aphodius (Acrossus) hingstoni* Petrovitz, Ent. Bl. Biol. Syst. Käfer, 72: 2—4, [n. syn.].

Material: Holotype female of *A. angustiarum* — Nepal, Dudh Kosi valley, 3400 m; paratype female — Khumjung, 3800 m (ZSM). Holotype male of *A. simlaicus* — Himalaya, Simla. Paratype male of *A. hingstoni* — Sikkim, Tangu; paratype male of *A. hingstoni* f. *rufipennis*, the same data (MHNG). — West Nepal, Chitre, 2400 m, 26—31. V. 1984, 1 ex. (NHMB), leg. RAI.

Complementary description: Epipharyngeal epitorma not sclerotized, covered with very short pubescence; the bristles of chaetoparia and chaetopodium rather thin and short, shorter and thicker than those of acroparia.

Remarks: A Himalayan species, known hitherto from India (Kumaon), Sikkim and Nepal. It is closely related to *A. emodus* and *A. opacipennis* from which it differs by the shape of male genitalia and by the characters given in the key.

3.1.32. *Aphodius (Acrossus) opacipennis* A. Schmidt, 1910 (figs. 40—42)

1910 *Aphodius (Acrossus) opacipennis* A. Schmidt, Dt. ent. Z.: 356, et Auct.

Material: China, Szechwan, 4 ex. (MHNG). — Nepal, Annapurna, Chomrung, 3800 m, 7. IX. 1981, 1 ex. ♂ (ISEZ), leg. PAWŁOWSKI & KUSKA.

Complementary description: Epipharyngeal epitorma not sclerotized, covered with very short and dense pubescence; the setae of acroparia short and thin; the scarce setae of chaetopodium and chaetoparia thicker than the remaining ones, the setae of paria thin, short and dense.

Remarks: The species has been originally described from Sikkim and recorded from China by BALTHASAR (1964). In Nepal it is indicated for the first time.

3.1.33. *Aphodius (Acrossus) jubingensis* Balthasar, 1967 (figs. 35—36)

1967 *Aphodius (Acrossus) jubingensis* Balthasar, Acta ent. bohemoslov., 64: 126—127, fig. 4.

Material: Holotype male and paratype — Nepal, Prov. No 3 East, Jubing, 1600 m (ZSM). — Prov. Bagmati, Malemchi, 2800 m, 14. IV. 1981, below Tarke Ghyang, 2600 m, 25. IV. 1981, 4 ex. (MHNG), leg. LÖBL & SMETANA. — Khandbari Distr., above Tashigaon, 3100 m, 8. IV. 1982, 2 ex. (CH), leg. A. & Z. SMETANA. — Kali Gandaki (river), Kopchepani, 2400 m, 17—19. V. 1984, 2 ex. (NHMB), leg. RAI. — Kathmandu Distr., Gulubhanjyang, 2800 m, 9. V. 1967, 1 ex. (BRIO), leg. Can. Nep. Exp. — Ilam Distr., Mai Pokhari, 2100—2200 m, 25—27. III. 1980, 1 ex. (SMF), leg. MARTENS & AUSOBSKY. — Gorkha Distr., Buri Gandaki, Nyak bis Chuling Khola, 2450—2870 m, *Pinus excelsa*, 2. VIII. 1983, leg. MARTENS & SCHAWALLER, 1 ex. (SMNS).

Complementary description: Epipharyngeal epitorma lightly sclerotized; the bristles of chaetopodium the same size as those of chaetoparia, pedium covered with very short pubescence, the remaining setae of paria short, thin and dense.

Remarks: The species is known up to now only from Nepal.

3.1.34. *Aphodius (Acrossus) ritsemai* A. Schmidt, 1909 (figs. 43—45)

1909 *Aphodius ritsemai* A. Schmidt, Not. Leyden Mus., 31: 112.

1913 *Aphodius (Acrossus) ritsemai* A. Schmidt, Arch. Naturg., 79 A: 131, et Auct.

Material: Dolpo Distr., ascent to Bagar La, 3800—4000 m, 16. VI. 1973, 2 ex. (SMNS), 2 ex. (SMF). — Dolpo Distr., ascent to Namu La, 4300—4450 m, 17. VI. 1973, 3 ex. (SMNS), 4 ex. (SMF), leg. MARTENS.

Complementary description: Epipharyngeal epitorma not sclerotized, covered with very short and dense pubescence, shorter than very dense setae of paria; acroparia with short, thin setae, the scarce setae of chaetopodium and chaetoparia thicker than the remaining setae.

Remarks: This species originally described from Sikkim was recorded from Nepal—Khumbu, 3900 m, by BALTHASAR (1964, 1965).

Key to the Nepalese species of the subgenus *Acrossus* Muls.

- 1 Length 12 mm or more, color yellowish brown or brown, elytra usually lighter; entire surface of the body shining, not shagreened. Sides of clypeus nearly straight toward genae. Elytral intervals moderately convex from base to apex *A. (A.) ritsemai*
- Length less than 12 mm, color piceous, black or dark castaneous, elytra sometimes red; fore body shining, elytra subopaque or opaque, shagreened. Sides of clypeus continuously arcuate toward genae. Elytral intervals moderately to strongly convex or flat 2
- 2 Body dark castaneous, one-colored, slightly opalescent. Entire surface of elytra minutely shagreened, elytral intervals moderately convex from base to apex *A. (A.) jubingensis*
- Body piceous or black, sometimes elytra red. Entire surface of elytra shagreened or elytra in part shagreened, elytral intervals otherwise shaped 3
- 3 Body piceous, one-colored, entire surface of elytra minutely and very densely shagreened, satin. Elytral striae extremely fine, elytral intervals flat from base to apex *A. (A.) eberti*
- Body black, sometimes elytra red. A part of elytra shagreened, elytral striae fine to moderate, elytral intervals in part convex 4
- 4 Anterior part of elytra shining with distinctly impressed striae and moderately convex

- intervals, posterior part shagreened with faintly impressed striae and strongly convex intervals *A. (A.) emodus*
- Anterior part of elytra more or less shining with slightly impressed striae and moderately convex intervals, posterior part shagreened with faintly marked striae and flat intervals 5
- 5 Anterior part of elytra subopaque, minutely shagreened, intervals minutely punctate only at base, sutural intervals strongly convex *A. (A.) angustiarum*
- Anterior part of elytra shining, intervals finely punctate from base to apex, sutural intervals nearly flat *A. (A.) opacipennis*.

3.1.35. *Aphodius (Platyderides) viturati* Reitter, 1907 (figs. 46—48)

1907 *Aphodius (Acrossus) viturati* Reitter, Dt. ent. Z.: 411, et Auct.

1964 *Aphodius (Platyderides) viturati*, — Balthasar, Monogr., 3: 49.

Material: Langtang National Park, vicinity of valley Gosainkund, 3850 m, 27. IX. 1981, 1 ex. ♂ (ISEZ) leg. PAWŁOWSKI.

Complementary description: Epipharyngeal epitorma lightly sclerotized only in posterior half; all setae thin, those of acroparia longer than the remaining ones. The type of epipharynx similar to this found among the species of *Paulianellus* Balth.

Remarks: This very poorly known and rare species has been recorded so far only from China (Nanshan, Szechwan). The species of the subgenus *Platyderides* A. Schm. are characterized by very large, semicircular head and by very strongly protrudent, right-angled genae. They seem to be much more closely related to the representatives of the subgenus *Acrossus* Muls.

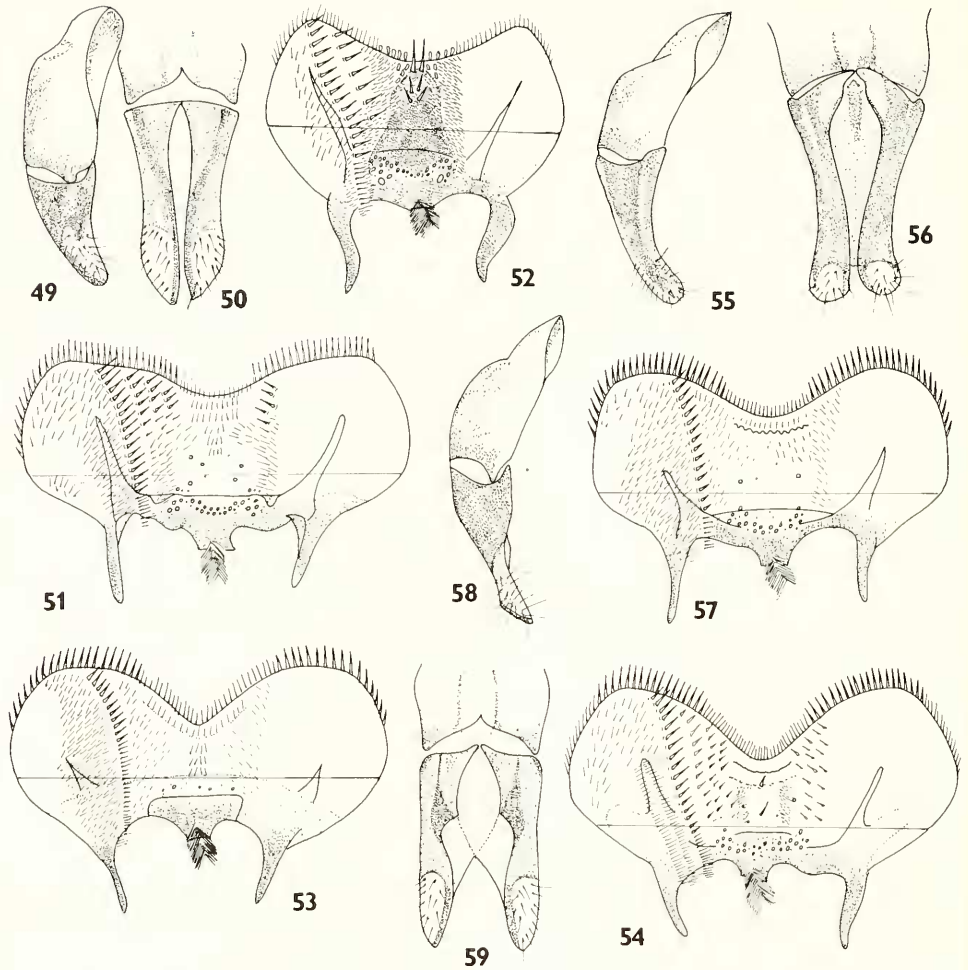
3.1.36. *Aphodius (Paulianellus) mureensis* Stebnicka, 1981 (fig. 52)

1981 *Aphodius (Paulianellus) mureensis* Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 28: 531—533, figs. 1—5.

Material: Khandbari Distr., NE Kuwapani, 2500 m, 11—15. IV. 1982, 2 ex. (CH), leg. A. & Z. SMETANA. — Prov. Bagmati, Dobate Ridge NE Barahbise, 2800 m, 2. V. 1981, Chaubas, 2500 m, 4. IV. 1981, Kosi, vicinity of Num, 1800—2000 m, 23. IV. 1984, 5 ex. (CH, MHNG).

Complementary description: Epipharyngeal epitorma sclerotized; acroparia with moderately long, thin setae and a few short, lanceolate bristles medially; the bristles of chaetoparia moderately long and moderately thick; 7—8 bristles of chaetopodium somewhat shorter and thicker than those of chaetoparia; the remaining setae of paria short and thin.

Remarks: As remarked in the original description, *A. mureensis* is much more closely related to Japano-Chinese species *A. maderi*. On the other hand, the remaining species included in the subgenus *Paulianellus* Balth. do not fit satisfactorily into this subgenus, apparently being closest to *Trichaphodius*-species by the shape of male genitalia, but also having characteristics of *Acrossus*-species, such as superficial appearance, the shape of the head and the presence of thick border of pronotal sides. In the course of determining the affinities of one undescribed species, *A. trisuliensis* n. sp. and *A. decoctor*, I have examined the *Paulianellus*-species critically and the resulting separation within the subgenus is presented in the key.



- Figs. 49—51. *Aphodius (Paulianellus) nepalensis* Balth. — 49—50. aedeagus (lateral and dorsal view); — 51. epipharynx.
 Fig. 52. *Aphodius (Paulianellus) murensis* Stebn., epipharynx.
 Fig. 53. *Aphodius (Paulianellus) jacksoni* Petr., epipharynx.
 Figs. 54—56. *Aphodius (Paulianellus) decoctor* Balth. — 54. epipharynx; — 55—56. aedeagus (lateral and dorsal view).
 Figs. 57—59. *Aphodius (Paulianellus) trisuliensis* n. sp. — 57. epipharynx; — 58—59. aedeagus (lateral and dorsal view).

3.1.37. *Aphodius (Paulianellus) nepalensis* Balthasar, 1965 (figs. 49—51)

1965 *Aphodius (Paulianellus) nepalensis* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 2: 110—111, fig. 1.

1981 *Aphodius (Paulianellus) nepalensis*, — Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 28: 535, figs. 12—15.

Material: Gorkha Distr., NE Rupina La, Kalo Pokhari, 3700—4000 m, 7. VIII. 1983, 1 ex. (SMF), Tabruk Kharka, 4000 m, 7—8. VIII. 1983, 3 ex. (SMNS), 3 ex. (SMF), between Tabruk Kharka and Rupina La, 4100—4200 m, 9. VIII. 1983, 1 ex. (SMNS), Chuling Khola,

Djongshi Kharka, 3050—3400 m, 5. VIII. 1983, 1 ex. (SMF), Chuling Khola, Djinshi Kharka, 3400 m, 5. VIII. 1983, 1 ex. (SMNS), Darondi Khola, above Barpak, 3000—3300 m, *Rhododendron*-forest, 11. VIII. 1983, 1 ex. (SMNS), leg. MARTENS & SCHAWALLER. — Manang Distr., Marsyandi, Thimang/Bagarschap, 2550 m, 14—17. IV. 1980, Thimang, 2550 m, *Tsuga/Acer/Rhododendron*, 14—17. IV. 1980, 61 ex. (SMNS), 46 ex. (SMF), leg. MARTENS & AUSOBSKY. — Vicinity of Pokhara, IX./X. 1971, 4 ex. (CF), leg. FRANZ. — Parbat Distr., Gorapani Pass, N slope, 2700 m, 6. X. 1983, Prov. Bagmati, above Tarke Ghyang, 3300 m, 24. IV. 1981, 41 ex. (MHNG), leg. LÖBL & SMETANA. — Jangtang Ridge, NE Barabhise, 3150 m, 4. V. 1981, Pun Hill, Gorapani Pass, 3050—3100 m, 8. X. 1983, 57 ex. (CH), leg. LÖBL & SMETANA. — Thodung via Those, 3100 m, 29. V. 1976, leg. WITTMER & BARONI-URBANI. — Syabru, 2200—3350 m, 12. VI. 1978, leg. BHAKTA BAHADUR, 7 ex. (NHMB). — Trisuli Bazar, 3600 m, 12—28. V. 1967, vicinity of Trisuli Bazar, 3300 m, 13—17. V. 1967, 102 ex. (BRIO), leg. Can. Nep. Exp. — Taplejung Distr., S Gunsu, 3600—3800 m, 10. IX. 1983, 1 ex. (SMF), leg. MARTENS & DAAMS.

Complementary description: Epipharyngeal epitorma not sclerotized; acroparia with long and thick bristles gradually decreasing in size toward acanthoparia; the bristles of chaetoparia shorter and thinner than those of acroparia, the remaining setae of paria short and fine.

Remarks: This species is known hitherto only from Nepal. Recorded from Khumbu-Khumjung 3900 m, Thodung 3100 m, Ting Sang La 3800 m, Kathmandu 1400 m, and Manhari 350 m, by BALTHASAR (1965) and STEBNICKA (1981 b).

3.1.38. *Aphodius (Paulianellus) jacksoni* Petrovitz, 1975 (fig. 53)

1975 *Aphodius (Paulianellus) jacksoni* Petrovitz, Ent. Bl. Biol. Syst. Käfer, 71: 113.

1981 *Aphodius (Paulianellus) jacksoni*, — Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 28: 535.

Material: Paratype female — Nepal, Yalung valley, 3900 m, (MHNG).

Complementary description: Epipharyngeal epitorma not sclerotized; the bristles of acanthoparia and acroparia the same thickness as those of chaetoparia, somewhat longer; the setae of paria thin, the setae of pedium become gradually shorter toward crepis.

Remarks: Since the original description no additional specimens were found. The species is very similar to *A. nepalensis* from which it may be distinguished by the characters given in the key.

3.1.39. *Aphodius (Paulianellus) decoctor* Balthasar, 1965, [n. comb.] (figs. 54—56)

1965 *Aphodius (Trichaphodius) decoctor* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 2: 109—110.

Material: Holotype male — Nepal, Dudh Kosi valley, 3500 m; Paratypes (5), the same data as holotype (ZSM). — Gorkha Distr., Chuling Khola, Djinshi Kharka, 3400 m, 4—5. VIII. 1983, 5 ex. (SMNS), 5 ex. (SMF), Meme Kharka, 3300—3400 m, 5—6. VIII. 1983, *Abies*, 4 ex. (SMNS), 3 ex. (SMF), S Kalo Pokhari, 3600 m, 7. VIII. 1983, *Betula*, 1 ex. (SMF), leg. MARTENS & SCHAWALLER. — S Annapurna, 3500—3800 m, 12. IX. 1981, 1 ex. (ISEZ), leg. KUSKA. — Trisuli Bazar, 3600 m, 18—21. V. 1967, 13 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal epitorma not sclerotized; acroparia with long, thick bristles that are longer and thicker than those of chaetoparia; the remaining setae of paria and pedium short and thin.

Remarks: The species is known only from Nepal. See under *A. murensis*.

3.1.40. *Aphodius (Paulianellus) trisuliensis* n. sp. (figs. 57—59)

Holotype: ♂ (BRIO), Nepal, 27° 56' N, 85° 00' E, vicinity of Trisuli Bazar, 3600 m, pastures, 13. V. 1967, leg. Can. Nep. Exp.

Paratypes: 15 ex. ♂♂ and ♀♀ (BRIO, SMNS, ISEZ), same locality as holotype, 12, 23. V. 1967, leg. Can. Nep. Exp.

Description: Length 4.5—5.5 mm, greatest width 1.7—2.0 mm. Body elongate, slender, moderately convex, shining. Fore body black, sides of pronotum reddish yellow or yellowish brown, elytra yellowish brown or brown, sometimes sutural intervals, base of elytra and apical declivity lighter; antennal clubs and palpi maxillaris black, legs brown, femora usually lighter. Sides of elytra and apical declivity covered with very short, scarce, inconspicuous setae.

Head semicircular, slightly convex at middle, frontal suture very weakly marked; clypeal margin very finely reflexed with more or less protrudent, triangular process at middle, clypeal surface anteriorly alutaceous, the punctures fine, separated by two to three their diameters throughout.

Pronotum rectangular, sides visible when viewed from directly above, arcuate, with thick border from anterior to posterior angles, posterior angles obtusely rounded, base immargined; surface punctures moderately dense, mixed fine and moderate, separated by one to two their diameters, the punctures become a trifle larger and closer toward the sides of pronotum.

Scutellum triangular, very finely punctate or impunctate.

Elytra oblong-oval, moderately convex, widest just behind the middle, humeri finely but distinctly dentate; striae moderately impressed with close punctures slightly crenating inner margins of the intervals; intervals convex, very minutely to finely punctate.

Metasternum slightly concave, midline feebly marked, disc with a few fine punctures. Abdominal sterna shagreened, covered with short, yellow hairs.

Legs slender. Middle and hind femora shining, finely punctate. Anterior tibia slender, lateral teeth well separated, acute, apical spur straight, sharply pointed; middle and hind tibia slender with well developed transverse ridges, apical setae unequal in length, tarsi long; first segment of posterior tarsus about $\frac{1}{2}$ longer than the upper tibial spur and subequal in length to the next three segments combined; the last tarsal joint as long as the former two segments combined.

Epipharyngeal epitorma not sclerotized; acroparia with long, thick bristles that are longer and thicker than those of chaetoparia; the remaining setae of paria and scarce setae of pedium short and thin.

Male: Clypeal process larger and more protrudent outside of clypeus than in female, pronotum wider and less convex, the punctures on the disc of pronotum usually finer.

Female: Clypeal process smaller than in male, bent downward, pronotum narrower and more convex, the punctures on the disc of pronotum usually larger and closer.

Remarks: The new species is much more similar to *A. decoctor*, from which it may be distinguished by the characters given in the key and by the features of male aedeagus.

Key to the Nepalese species of the subgenus *Paulianellus* Balth.

- 1 Body oval. Anterior edge of clypeus distinctly emarginate, third segment of maxillary palpus in both sexes cylindrical. Elytra nude, humeri without trace of denticles. Tarsus nearly as long as the tibia (Group I). *A. (P.) mureensis*
- Body oblong-oval. Anterior edge of clypeus and maxillary palpus otherwise shaped. Sides and apical part of elytra piliferous, humeri always denticulate. Tarsus longer than the tibia 2

- 2 Anterior edge of clypeus truncate or very inconspicuously emarginate. Third segment of maxillary palpus in male widened and flat, in female cylindrical (Group II) 3
 — Anterior edge of clypeus slightly emarginate or furnished with triangular process. Third segment of maxillary palpus in both sexes cylindrical (Group III) 4
 3 Elytra black, brownish black or brown, slightly widened toward apex, intervals finely but distinctly punctate. First segment of posterior tarsus equal in length to the upper tibial spur and equal or subequal to the next three segments combined *A. (P.) nepalensis*
 — Elytra yellow or brownish yellow, strongly widened toward apex, intervals nearly impunctate. First segment of posterior tarsus shorter than the upper tibial spur and shorter than the next three segments combined *A. (P.) jacksoni*
 4 Body castaneous, one-colored, anterior edge of clypeus slightly emarginate, apical declivity of elytra with white, short and dense hairs. First segment of posterior tarsus $\frac{1}{3}$ longer than the upper tibial spur. *A. (P.) decocctor*
 — Fore body black, sides of pronotum and elytra lighter. Anterior edge of clypeus with triangular process, apical declivity and sides of elytra with scarce, short setae. First segment of posterior tarsus $\frac{1}{3}$ longer than the upper tibial spur. *A. (P.) trisulienis* n. sp.

3.1.41. *Aphodius (Trichaphodius) nigrovirgatus* A. Schmidt, 1909 (figs. 60—61)

1909 *Aphodius nigrosulcatus* A. Schmidt, Soc. entomol., 23: 189, [nom. praeocc.].

1911 *Aphodius nigrovirgatus* A. Schmidt, Stettin. ent. Ztg., 72: 49, [n. nom.].

1913 *Aphodius (Trichaphodius) nigrovirgatus* A. Schmidt, Arch. Naturg., 79A: 136, et Auct.

Material: Kathmandu valley, Godawari, 1600 m, 24. IV. 1976, 3 ex. (NHMB), leg. WITTMER & BARONI-URBANI.

Complementary description: Epipharyngeal epitorma sclerotized; acanthoparia with additional plates characteristic of epipharynx of *Trichaphodius*-species; the setae of acroparia very long, rather thin; 8—9 bristles of chaetopodium the same length as those of chaetoparia, somewhat thicker; the remaining setae of paria and pedium short and thin.

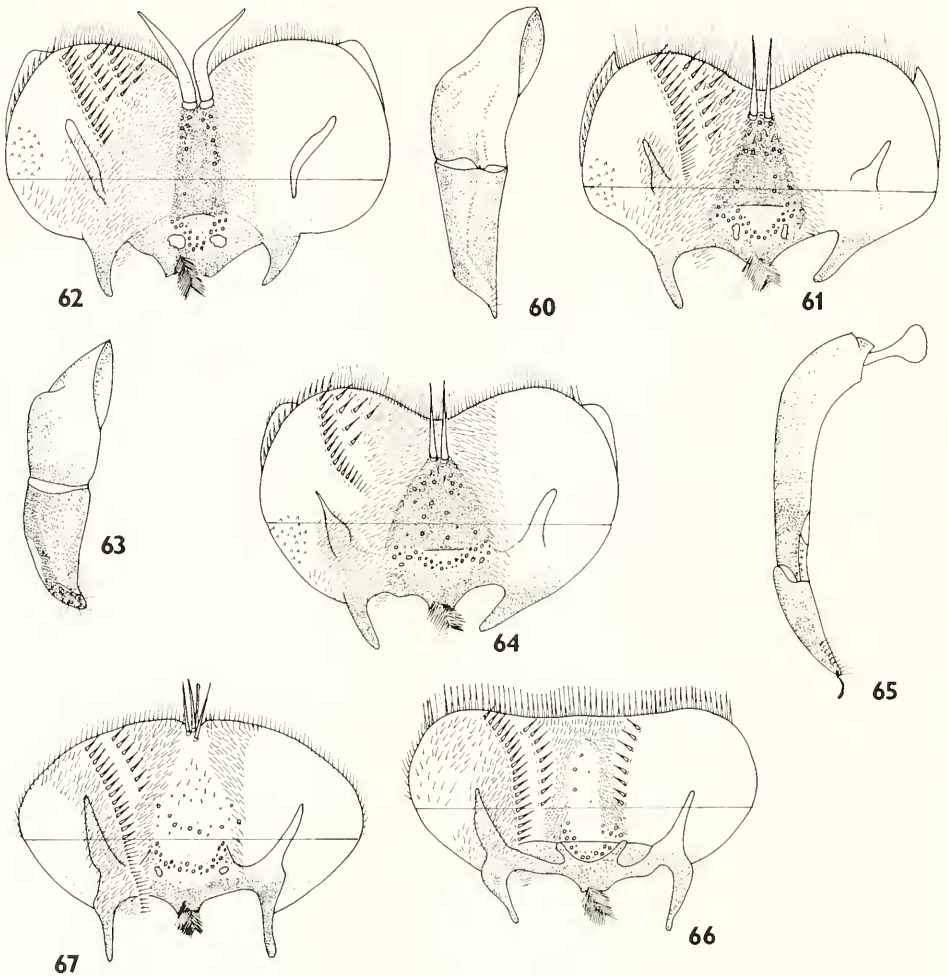
Remarks: The species is known from China (Yunnan), Vietnam, the Philippines and Celebes. It has been recorded from Nepal — Godawari, 1600 m and from India — Uttar Pradesh by STEBNICKA (1981 a).

3.1.42. *Aphodius (Trichaphodius) jirianus* Balthasar, 1965 (fig. 62)

1965 *Aphodius (Trichaphodius) jirianus* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 2: 110.

1981 *Aphodius (Trichaphodius) jirianus*, — Stebnicka, Entomol. Basiliensia, 6: 323—324, figs. 7—9.

Material: Taplejung Distr., Gunsa Khola, between Amjilesa and mouth of Gunsa Khola, 1900—2400 m, 13. IX. 1983, 5 ex. (SMNS), 6 ex. (SMF), Dhankuta Distr., vicinity of Hille, 2100—2150 m, 19. IX. 1983, 1 ex. (SMNS), 2 ex. (SMF), leg. MARTENS & DAAMS. — Gorkha Distr., Buri Gandaki, Nyak, 2270—2450 m, *Pinus excelsa*, 1. VIII. 1983, 1 ex. (SMNS), 1 ex. (SMF), leg. MARTENS & SCHAWALLER. — Manang Distr., 1500 m, 19. IX. 1983, Kosi, vicinity of Num, 1800—2000 m, 23. IV. 1984, Kuwapani-Chichila, 2100—2300 m, 24. IV. 1984, 47 ex. (MHNG), leg. LÖBL & SMETANA. — Dhunche, 2500 m, 25. IX. 1981, 22 ex. (ISEZ), leg. KUSKA. — Prov. Bagmati, NE Barabhise, 2500 m, 2. V. 1981, 1 ex. (CH), leg. LÖBL & SMETANA. — Arun river, Mure, 2000 m, 2—9. VI. 1983, leg. BRANCUCCI. — Chandam Bari, 3350 m, 26. VI. 1979, Syabru, 2200—3350 m, 12. VI. 1978, Dudh Khola valley, leg. BHAKTA BAHADUR, 10 ex. (NHMB). — Vicinity of Pokhara, 820 m, Jumla, Machidoela Pass, vicinity of Maharigaon, 5000 m, Ting Sang La, 3800 m, Khumbu near Lughla, 3900 m, IX—X. 1971, 6 ex. (CF), leg. FRANZ. — Lothar near Birganj, 170 m, 30. VIII. 1967, Kathmandu Distr., Patibhanjyang, 2000 m, pastures, 12. VI. 1967, Godawari, 1600 m, 5. VIII. 1967, Gulubhan-



Figs. 60—61. *Aphodius (Trichaphodius) nigrovirgatus* A. Schm. — 60. aedeagus (lateral view); — 61. epipharynx.

Fig. 62. *Aphodius (Trichaphodius) jirianus* Balth., epipharynx.

Figs. 63—64. *Aphodius (Trichaphodius) rangoonensis* Petr. — 63. aedeagus (lateral view); — 64. epipharynx.

Figs. 65—66. *Aphodius (Balthasarianus) gregori* Balth. — 65. aedeagus (lateral view); — 66. epipharynx.

Fig. 67. *Aphodius (Calaphodius) moestus* F., epipharynx.

jiang, 2800 m, 2. VII. 1967, Sunderijal, 2600 m, 12. VI. 1967, oak forest, Mamche Danda, 2600 m, 9. V. 1967, 250 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal epitorma sclerotized; acroparia with long, mixed thin and moderately thick setae; the bristles of chaetoparia moderately long and moderately thick; 12—14 bristles of chaetopodium the same length as those of chaetoparia, somewhat thicker; the remaining setae of paria thin.

Variation: Colour black or with reddish-yellow areas in the head, pronotum and elytra; or whole pronotum darker than elytra; or antero-lateral angles of pronotum lighter than the rest of dorsal surface and elytra reddish yellow with darker spots. Considerable variation exists in density, depth and diameter of punctures and in some aspects of setosity as well as in the shape of elytra. The variation in size may well be dependent on local, variably favorable environmental circumstances.

Remarks: The species is very common in Nepal. Recorded from Nepal (Jiri-Thodung, 1800—1900 m, Danda Pakhar, 1600—2500 m) and from India (Uttar Pradesh, Darjeeling) by STEBNICKA (1981a).

3.1.43. *Aphodius (Trichaphodius) vultuosus* Balthasar, 1971

1971 *Aphodius (Trichaphodius) vultuosus* Balthasar, Beitr. Ent., 21: 58—59.

Type-Localities: Nepal, Rapti valley, Jhawani, 200 m.

Remarks: Since the original description no additional specimens were found. The species has been poorly described on the base of a single specimen probably kept in the BALTHASARS collection in Prague and not available for study. Judging from the original description, *A. vultuosus* is a valid species, however, the much needed revision of the entire *Trichaphodius*-group may perhaps show it to be one of the numerous, rather poorly described species that have been named earlier. Most Oriental species of *Trichaphodius* can hardly or not be distinguished by outer characters because of very advanced individual variability and sexual dimorphism. The characters given in the key are selected from the original description of *A. vultuosus* Balth.

3.1.44. *Aphodius (Trichaphodius) rangoonensis* Petrovitz, 1970 (figs. 63—64)

1970 *Aphodius (Trichaphodius) rangoonensis* Petrovitz, Zeitschr. Arbeitsgem. österr. Entom., 22: 20.

1975 *Aphodius (Trichaphodius) bepyrrus* Petrovitz, Entomol. Basiliensia, 1: 217, [nom. nudum], [n. syn.].

1981 *Aphodius (Trichaphodius) pokharensis* Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 28: 535—536, figs. 16—18, [n. syn.].

Material: Holotype ♂ and paratypes of *A. rangoonensis* — Burma, Rangoon (MHNG). Paratype of *A. bepyrrus* — Nepal, Therai (MHNG). Paratypes of *A. pokharensis* — Nepal, Pokhara (ISEZ). — Nepal, Adhabhar near Simra, 200 m, 23—27. VIII. 1967, Lothar near Birganj, 170 m, 29. VIII. 1—12. IX. 1967, 3980 (!) ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal acroparia with long, mixed thin and moderately thick setae; the bristles of chaetoparia moderately long and moderately thick; 8—9 bristles of chaetopodium the same length as those of chaetoparia, somewhat thicker; the remaining setae of paria thin, moderately long to short.

Variation: Length ranges from 3.8 to 4.8 mm. Colour ranges from dark brown to yellow including specimens with reddish pronotum and yellow elytra. The darker or lighter spots before apex of elytra may be more or less distinct or absent. The usual variation in diameter, depth and density of punctures of pronotal surface occurs, as in those of elytral intervals.

Remarks: As stated in connection with the present study, the species is distributed in Birma, Bhutan and Nepal. See under *A. vultuosus*.

Key to the Nepalese species of the subgenus *Trichaphodius* A. Schm.

- 1 Surface of pronotum and elytra piliferous 2
 — Surface of pronotum nude, elytra piliferous in apical $\frac{2}{3}$ or in apical third 3
 2 Upper side of the body mat, disc of pronotum yellowish brown. Elytral striae distinctly impressed, striae punctures crenating inner margins of the intervals. First segment of posterior tarsus nearly equal in length to the upper tibial spur and shorter than the next three segments combined *A. (T.) vultuosus*
 — Upper side of the body shining, disc of pronotum black or brownish black. Elytral striae fine and shallow, striae punctures not crenating inner margins of the intervals. First segment of posterior tarsus nearly two times as long as the upper tibial spur and usually longer than the next three segments combined *A. (T.) jirianus*
 3 Base of pronotum narrowly bordered. Male: elytra piliferous in apical $\frac{2}{3}$, intervals with moderate punctures, apical spur of anterior tibia robust, obtusely pointed. Female: elytra piliferous in apical third, intervals finely punctate, apical spur of anterior tibia slender, sharply pointed *A. (T.) nigrovirgatus*
 — Base of pronotum never bordered. Male: elytra piliferous in apical $\frac{2}{3}$ or in apical third and on the sides, intervals finely punctate, apical spur of anterior tibia bent downward and curved inwardly at the tip. Female: elytra inconspicuously piliferous in apical third, intervals minutely punctate, apical spur of anterior tibia slender, sharply pointed. *A. (T.) rangoonensis*

3.1.45. *Aphodius (Balthasarianus) gregori* Balthasar, 1941 (figs. 65—66)

1941 *Aphodius (Trichaphodius) gregori* Balthasar, Mitt. Münch. ent. Ges., 31: 176.

1964 *Aphodius (Balthasarianus) gregori* Balthasar, Monogr., 3: 175—176.

1970 *Aphodius (Balthasarianus) abditus* Petrovitz, Zeitschr. Arbeitsgem. österr. Entomol., 22: 18—19, [n. syn.].

Material: Taplejung Distr., Gunska Khola, between Kibla and Amjilesa, 2400—2600 m, 12. IX. 1983, 1 ex. (SMNS), 1 ex. (SMF), between Amjilesa and mouth of Gunska Khola, 1900—2400 m, 13. IX. 1983, 7 ex. (SMNS), 8 ex. (SMF), Ilam Distr., Mai Pokhari, 2150—2250 m, 23—25. VIII. 1983, 1 ex. (SMF), leg. MARTENS & DAAMS. — Chomrung S Annapurna, 3800 m, 14. IX. 1981, Dhunche, 1800—2000 m, 26—27. IX. 1981, 76 ex. (ISEZ), leg. PAWŁOWSKI & KUSKA. — Khandbari Distr., Kuwapani, 2300 m, VI—VII. 1983, leg. DORJEE SHERPA. — Arun river, Mure, 2000 m, 2—8. VI. 1983, Lamobagar Gola, 1400 m, 8—14. VI. 1983, Mure via Chichila, 1800—1900 m, 18. VI. 1983, Kosi, Gorza, 2100 m, 5—6. VI. 1985, Kathmandu Distr., Sakhu, 1400 m, 17. VI. 1983, leg. BRANCUCCI. — Syabru, 2200—3350 m, 12. VI. 1978, leg. BHAKTA BAHADUR, 39 ex. (NHMB). — Prov. Bagmati NE Barahbise, 2500 m, 2. V. 1981, 4 ex. (CH), leg. LÖBL & SMETANA. — Kosi, Kuwapani-Chichila, 2100—2300 m, 23—24. IV. 1984, Pangma via Ahale, 1600—2000 m, 4. IV. 1984, vicinity of Num, 1800—2000 m, 23. IV. 1984, 20 ex. (MHNG), leg. LÖBL & SMETANA. — Khumbu near Lughla, 3800 m, Dhampus near Pokhara, 850 m, Ghasa near Lethe, 2300 m, IX—X. 1971, 4 ex. (CF), leg. FRANZ. — Kathmandu Distr., Gulubhanjyang, 2800 m, 2. VII. 1967, Patibhanjyang, 2000 m, 21. VII. 1967, Godawari, 1600 m, 19. VII. 1967, Lothar near Birganj, 170 m, 30. VIII. 1967, 16 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal epitorma not sclerotized; acroparia with long and thick bristles, that are longer and thicker than those of chaetoparia and chaetopodium; pedium covered with short fine setae.

Remarks: The species is very common in Nepal, known from India (Bengal, Darjeeling), Bhutan and Sikkim. Indicated in Nepal by BALTHASAR (1965) and STEBNICKA (1981 a) from: Jiri, 1900 m, Ting Sang La, 3800 m, Naulaphur, 2400 m, Bi Khola Valley, 2300—2800 m, Likhu Khola valley, 1700 m, Mure, 2000 m, Phulchoki Mt., 2600 m.

3.1.46. *Aphodius (Balthasarianus) fruhstorferi* Petrovitz, 1970

1970 *Aphodius (Balthasarianus) fruhstorferi* Petrovitz, Zeitschr. Arbeitsgem. österr. Entomol., 22: 19—20.

Material: Kosi, Arun valley SS Num, 1050 m, 22. IV. 1984, 1 ♀ (MHNG), leg. LÖBL & SMETANA.

Remarks: The species is known from India-Darjeeling, described on the base of a single female specimen. In Nepal it is here indicated for the first time, unfortunately the mouth organs of one female specimen at my disposal are damaged. Male unknown.

Key to the Nepalese species of the subgenus *Balthasarianus* Paul.

- 1 The punctures of the head and pronotum moderately large and moderately coarse, genae obtuse, protrudent. Elytra oblong-oval, base not bordered. First segment of posterior tarsus equal in length to the next three segments combined. *A. (B.) gregori*
 — The punctures of the head and pronotum large and coarse, genae rounded, not protrudent. Elytra short-oval, base distinctly bordered. First segment of posterior tarsus equal in length to the remaining segments combined *A. (B.) fruhstorferi*.

3.1.47. *Aphodius (Aganocrossus) urostigma* Harold, 1862 (figs. 68—69)

1862 *Aphodius urostigma* Harold, Berl. ent. Z., 6: 170.

1913 *Aphodius (Aganocrossus) urostigma*, — A. Schmidt, Arch. Naturg., 79 A: 135, et Auct.

Material: Manang Distr., Marsyandi near Bagarschap, 2100 m, *Pinus excelsa*, 1 ex. (SMF), 12. IV. 1980, leg. MARTENS & AUSOBSKY. — Gorkha Distr., Darondi Khola, near Barpak and Doroni, 1 ex. (SMNS), 900—1100 m, 12. VIII. 1983, Kathmandu valley, Ganabahal and Baneshwar, 1400 m, 17—20. VII. 1983, leg. MARTENS & SCHAWALLER, 1 ex. (SMNS). — Prov. Bagmati, NE Barabhise, 2500 m, 2. V. 1981, Jangtang Ridge, 3300 m, 4—6. V. 1981, 20 ex. (CH), leg. LÖBL & SMETANA. — Kosi, vicinity of Num, 1800—2000 m, 23. IV. 1984, Kuwapani, 2100—2300 m, 24. IV. 1984, Kathmandu Distr., Cobhar, 1300 m, 12. IX. 1983, 42 ex. (MHNG), leg. LÖBL & SMETANA. — Sarankot, 17. IX. 1981, 52 ex. (ISEZ), leg. PAWŁOWSKI & KUSKA. — Kathmandu Distr., Godawari, 1600 m, 5—15. VIII. 1967, Lothar near Birganj, 170 m, 29. VIII., 1—3, 9, 29. IX. 1967, Adhabhar near Simra, 200 m, 23—28. VIII. 1967, 80 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Epipharyngeal epitorma sclerotized; 8—9 bristles of chaetopodium thicker than the bristles of chaetoparia, the setae of pedium thin, gradually decreasing in size toward crepis.

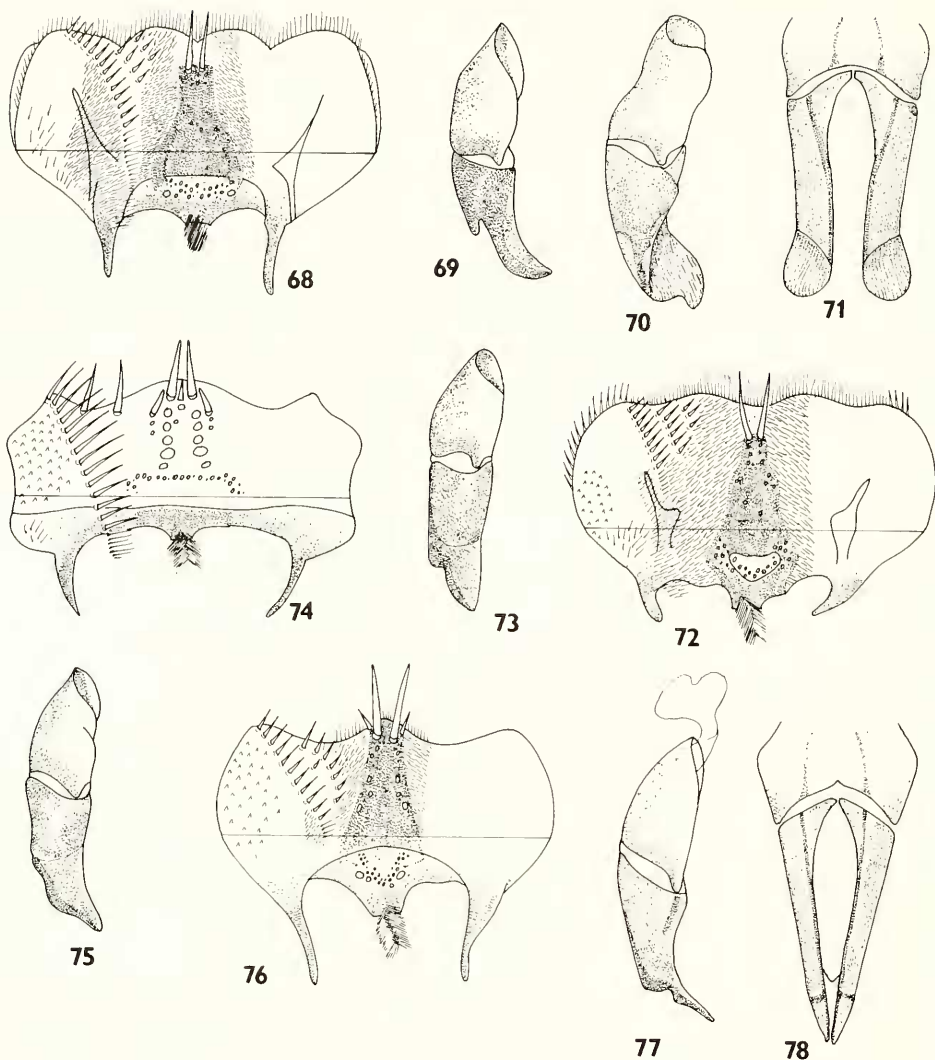
Remarks: The species is common throughout Indochina, China, Korea, India and the Himalayan region to Afghanistan (STEBNICKA 1980), and known to be represented by a number of variations. Recorded from Nepal by BALTHASAR (1965) and STEBNICKA (1981a).

3.1.48. *Aphodius (Aganocrossus) khuntianus* Balthasar, 1940 (figs. 70—72)

1939 *Aphodius (Aganocrossus) urostigmoides*, — Balthasar, Redia, 25: 20 (nec A. Schmidt, 1913).

1940 *Aphodius (Aganocrossus) khuntianus* Balthasar, Ent. Bl. biol. Syst. Käfer, 36: 38.

Material: Kathmandu, 1400 m, 24. V. 1976, 1 ex. (NHMB), leg. WITTMER & BARONI-URBANI. — Prov. Bagmati, Barabhise, 1600 m, 1. V. 1981, NE Barabhise, 2500 m, 2. V. 1981, Kosi, Kuwapani/Chichila, 2100—2300 m, 24. IV. 1984, Kathmandu Distr., Cobhar, 1300 m, 12. IX. 1983, 13 ex. (CH, MHNG), leg. LÖBL & SMETANA. Adhabhar near Simra, 200 m, 23, 27. VIII. 1967, Kathmandu Distr., Godawari, 1600 m, 8. VIII. 1967, 50 ex. (BRIO), leg. Can. Nep. Exp.



- Figs. 68—69. *Aphodius (Aganocrossus) urostigma* Har. — 68. epipharynx; — 69. aedeagus (lateral view).
- Figs. 70—72. *Aphodius (Aganocrossus) khuntianus* Balth. — 70—71. aedeagus (lateral and dorsal view); — 72. epipharynx.
- Figs. 73—74. *Aphodius (Plagiogonus) palea* Balth. — 73. aedeagus (lateral view); — 74. epipharynx.
- Fig. 75. *Aphodius (Plagiogonus) ramamiensis* Stebn., aedeagus (lateral view).
- Figs. 76—78. *Aphodius (Plagiogonus) martensi* n. sp. — 76. epipharynx; — 77—78. aedeagus (lateral and dorsal view).

Complementary description: Epipharyngeal epitorma sclerotized; the bristles of acroparia mixed with thin setae; the bristles of chaetoparia and chaetopodium rather short and thin, the remaining setae of paria and pedium thin, equal in length.

Remarks: The species distributed in India and Ceylon is common in Nepal, recorded from Kathmandu-Godawari, 1600 m and Ting Sang La, 3800 m, by BALTHASAR (1965) and STEBNICKA (1981 a). It is characterized by a considerable variability.

Key to the Nepalese species of the subgenus *Aganocrossus* Reitt.

- 1 Intervals of elytra moderately convex or flat. Three, four or five lateral intervals and these of apical declivity of elytra with a row of deep punctures along inner margins, the punctures bearing long, erect setae. Discal intervals in basal $\frac{2}{3}$ without deep punctures and setae
 *A. (A.) urostigma*
 — Intervals of elytra moderately or strongly convex. All intervals from base to apex with a row of deep punctures along inner margins and with long, erect setae. Sometimes, the punctures and setae are lacking in the two or three sutural intervals on the disc of elytra.
 *A. (A.) khuntianus*.

3.1.49. *Aphodius (Calaphodius) moestus* Fabricius, 1801 (fig. 67)

1801 *Aphodius moestus* Fabricius, Syst. Eleuth., I: 78.

1913 *Aphodius (Calaphodius) moestus*, — A. Schmidt, Arch. Naturg., 79 A: 138, et Auct.

Material: Adhabhar near Simra, 200 m, 23 VIII. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp. — Dhunche, 1800—2000 m, 26—27. IX. 1981, 2 ex. (ISEZ), leg. PAWŁOWSKI.

Complementary description: Epipharyngeal epitorma lightly sclerotized in posterior half; the bristles of chaetoparia and chaetopodium equal in size, moderately long and moderately thick, the remaining setae somewhat shorter and thinner.

Remarks: Widespread species, known from East and South Africa, Madagascar, Ceylon, India, Indochina, Afghanistan and Bhutan. New to Nepal.

3.1.50. *Aphodius (Plagiogonus) palea* Balthasar, 1967 (figs. 73—74)

1967 *Aphodius (Plagiogonus) palea* Balthasar, Acta ent. bohemoslov., 64: 128.

Material: Khandbari Distr., Khandbari, 1700 m, 23. III. 1982, 2 ex. (CH), leg. A. & Z. SMETANA.

Complementary description: Epipharyngeal epitorma not sclerotized with very large sensillae; the bristles of chaetoparia very long and thick. Female has nothing in external morphology to distinguish it from male.

Remarks: The species has been described from India — Darjeeling on the base of a single male specimen. In Nepal it is here indicated for the first time.

3.1.51. *Aphodius (Plagiogonus) ramamiensis* Stebnicka, 1982 (fig. 75)

1982 *Aphodius (Plagiogonus) ramamiensis* Stebnicka, Bull. Acad. pol. sci., Sér. Sci. biol., 29: 336—337, figs. 6—9.

Material: Khandbari Distr. NE Kuwapani, 2500 m, 28. III. 1982, leg. A. & Z. SMETANA. — Prov. Bagmati, Malemchi, 2800 m, 17. IV. 1981, Kathmandu Distr., Gokana, 1400 m, 31. III. 1981, leg. LÖBL & A. SMETANA, 4 ex. (CH).

Remarks: The species originally described from India — Darjeeling is recorded from Nepal for the first time.

3.1.52. *Aphodius (Plagiogonus) martensi* n. sp. (figs. 76—78)

Holotype: ♂ (SMNS), Gorkha Distr., Chuling Khola, Djinski Kharka, 3400 m, *Abies*, Almen, 4—5. VIII. 1983, leg. MARTENS & SCHAWALLER.

Paratypes: 1 ex. ♀ (SMNS), Chuling Khola, Djongschi Kharka, 3050—3400 m, mixed forest, 5. VIII. 1983, leg. MARTENS & SCHAWALLER. — 1 ex. ♀ (ISEZ), same data as holotype.

Description: Length 2.8—3.0 mm, greatest width 1.1—1.3 mm. Body oblong-oval, convex, shining; fore body homogeneously black, elytra and legs reddish brown.

Head convex at middle, clypeal margin very finely reflexed, rounded each side of rather wide and shallow median emargination, sides straight toward right-angled, slightly protrudent genae; surface alutaceous anteriorly, very finely punctate, the punctures of occipital area somewhat larger.

Pronotum rectangular, sides and posterior angles distinctly bordered, base lobed medially without border, sides arcuate toward obtuse posterior angles; surface punctures dense and fine, rather uniformly distributed throughout, separated by about one their diameter.

Scutellum narrowly triangular, impunctate.

Elytra convex, widest just behind the middle, humeri with a trace of denticles, apex very faintly emarginate; striae of median and basal area moderately impressed, finely and densely punctate, these of apical declivity and lateral area deeper with large, distant punctures that are as large as the adjacent intervals; intervals minutely punctate, moderately convex in basal $\frac{2}{3}$, strongly convex over apical declivity; the 7th and 9th intervals united before apex in moderately convex carina.

Metasternum convex, midline weakly marked, surface very finely punctate. Abdominal sterna minutely shagreened, finely punctate.

Legs slender, hind femora shining, impunctate; anterior tibia with three well separated, sharply pointed teeth and thin acute terminal spur; middle and hind tibia slender, apical setae rather long, unequal in length, apical spurs thin; first posterior tarsal segment a trifle shorter than the upper tibial spur and considerably shorter than the next three segments combined.

The sex indistinguishable externally.

Epipharyngeal epitorma sclerotized; the bristles of chaetoparia and chaetopodium rather long, moderately thick; pedium covered with short, thin and scarce setae.

Remarks: *A. martensi* n. sp. in overall appearance resembles *A. inflatus* described from China — Szechwan, however, it differs in having posterior angles of pronotum distinctly bordered, pronotal punctures dense, one-colored elytra and metatarsus shorter than the upper tibial spur.

Derivatio nominis: It is a real pleasure to dedicate this species to Prof. J. MARTENS, head of several expeditions to the Nepal-Himalayas.

Key to the Nepalese species of the subgenus *Plagiogonus* Muls.

- 1 Anterior edge of clypeus with two sharply pointed denticles and two small angulate projections on each side of median emargination; clypeal surface finely granulated and piliferous 2
- Anterior edge of clypeus rounded each side of median emargination, without denticles and projections; clypeal surface slightly alutaceous, very finely punctate and nude *A. (P.) martensi* n. sp.
- 2 Genae rounded, slightly protrudent. Base of pronotum narrowly bordered. Apex of elytra deeply emarginate with small epipleural denticles on each side *A. (P.) ramamiensis*

— Genae very small, not protrudent. Base of pronotum without trace of border. Apex of elytra rounded, not emarginate, epipleural denticles very small or absent *A. (P.) palca*.

3.1.53. *Aphodius (Alocoderus) teyrovskyi* Balthasar, 1935 (figs. 79—80)

1935 *Aphodius (Alocoderus) teyrovskyi* Balthasar, Fol. zool. Hydrobiol., 7: 255.

1955 *Aphodius (Alocoderus) milvus* Balthasar, Sb. ent. Odd. nár. Mus. Praze, 30: 416, (female).

1960 *Aphodius (Alocoderus) milvus* Balthasar, Opusc. zool., 44: 5, (male), [n. syn.].

Material: W Nepal, Dailekh, 650 m, 24. III. 1980, Kosi, vicinity of Num, 1800—2000 m, 23. IV. 1984, 4 ex. (MHNG), leg. LÖBL & SMETANA. — Prov. Bagmati, Chaubas, 2500 m, 4. IV. 1981, 2 ex. (CH), leg. LÖBL & SMETANA.

Complementary description: Length 7.0—8.5 mm. Epipharyngeal acroparia with thin, moderately long setae; the bristles of chaetoparia and chaetopodium equal in size; the setae of pedium thin, short and dense. Considerable variation exists in density, depth and diameter of punctures of the head and pronotum. More or less developed impunctate areas on pronotum, apart from the normal interspaces between punctures may be present or not, or the larger punctures may take a larger proportion.

Remarks: I have seen a series of specimens from India and Afghanistan as well as the type-specimens of BALTHASAR's species. The general morphological features of the specimens examined agree with *A. teyrovskyi* and with those of the conspecific *milvus*. There is no indication that different subspecies are involved, because a correlation between morphological characters and distribution could hardly be observed. This species is known from Afghanistan, Pakistan, Nepal, Sikkim, Darjeeling and from North Vietnam, indicated in Nepal under the name *A. milvus* (STEBNICKA, 1981 a).

3.1.54. *Aphodius (Alocoderus) holdereri* Reitter, 1900 (figs. 81—83)

1900 *Aphodius (Bodilus) holdereri* Reitter, Wien. Ent. Zeit., 19: 155, pl. I, fig. 1.

1913 *Aphodius (Alocoderus) holdereri*, — A. Schmidt, Arch. Naturg., 79A: 107, et Auct.

Complementary description: Epipharyngeal epitorma sclerotized; the numerous bristles of chaetopodium somewhat shorter and thinner than those of chaetoparia, the remaining setae of paria and pedium moderately long and thin.

Remarks: This species originally described from Tibet and recorded from Nepal (Mustangbhot) by BALTHASAR (1964) is lacking in the material studied and seems to be very rare. I have seen only the type-specimen deposited in Museum of Natural History in Budapest and one male specimen (MHNG) from Pakistan.

Key to the Nepalese species of the subgenus *Alocoderus* A. Schm.

- 1 Clypeal margin finely reflexed, sides broadly arcuate toward genae. Pronotum and elytra yellowish brown, disc of pronotum with darker spot. First segment of posterior tarsus as long as the upper tibial spur and equal or subequal in length to the next two segments combined *A. (A.) holdereri*
- Clypeal margin moderately to strongly reflexed, sides faintly rounded or straight toward genae. Pronotum and elytra black, brownish black or reddish, disc of pronotum without darker spot. First segment of posterior tarsus $\frac{1}{2}$ longer than the upper tibial spur and equal in length to the next two segments combined *A. (A.) teyrovskyi*.

3.1.55. *Aphodius (Nialus) lividus* (Olivier, 1789)

1789 *Scarabaeus lividus* Olivier, Ent. Col., 1: 86, t. 26, f. 222.

1842 *Aphodius lividus*, — Mulsant, Hist. nat. Col. Fr. Lamell.: 235.

1869 *Aphodius (Labarrus) lividus*, — Mulsant et Rey, Ann. Soc. Agric. Lyon, 4: 516, et Auct.

1892 *Aphodius (Nialus) lividus*, — Reitter, Verh. naturw. Ver. Brünn, 30: 202, et Auct.

Material: Lothar near Birganj, 170 m, 12. IX. 1967, 2 ex. (BRIO), leg. Can. Nep. Exp.

Remarks: The species is almost cosmopolitan, and is easily transported by human activities. Ecologically very tolerant, distributed over all tropical, subtropical and temperate regions. In Nepal it is indicated for the first time, in the Himalayas, it is known from Kashmir.

3.1.56. *Aphodius (Nialus) insularis* Petrovitz, 1961 (figs. 84—85)

1961 *Aphodius (Nialus) insularis* Petrovitz, Ent. Arb. Mus. Frey, 12: 106.

Material: Adhabhar near Simra, 200 m, 23—27. VIII. 1967, 9 ex. (BRIO), leg. Can. Nep. Exp. — Dhading Distr., Buri Gandaki, vicinity of Nyak, 1600—1800 m, mixed forest, 1. VIII. 1983, 1 ex. (SMNS), leg. MARTENS & SCHAWALLER.

Complementary description: The bristles of chaetoparia rather short and thin, the same size as 5—6 bristles of chaetopedium; the remaining setae of paria and pedium short and thin.

Remarks: The *Aphodius-lividus*-complex has been the subject of a revision by PETROVITZ (1961) who has split *lividus* into 10 species, most of which show an allopatric distribution. Whether some of the taxa involved should be treated on a subspecific or specific level remains an open question. In the general morphological structures as well as in the shape of male genitalia, the specimens examined agree with the *A. insularis*. This species has been originally described from Ceylon and afterwards recorded from Bhutan (PETROVITZ, 1975). I have seen also a series of specimens from Thailand and India-Darjeeling. In Nepal it is indicated for the first time.

3.1.57. *Aphodius (Nialus) jhavanicus* Balthasar, 1971

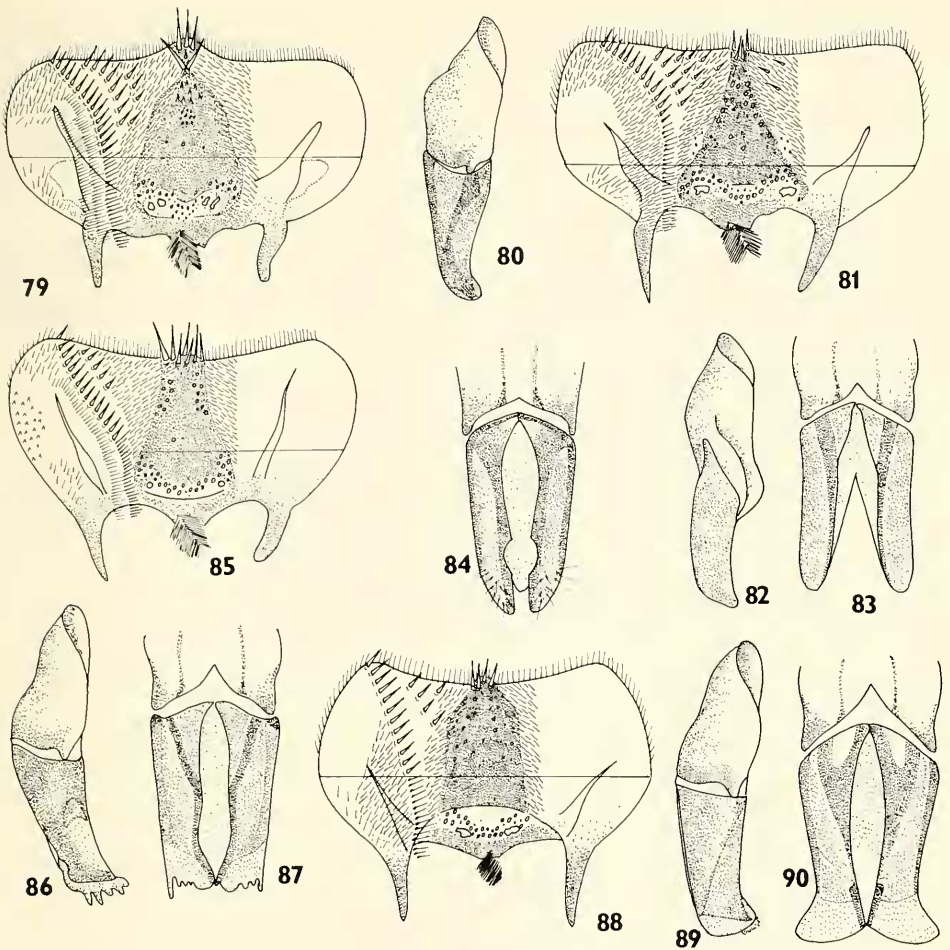
1971 *Aphodius (Nialus) jhavanicus* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 4: 18.

1985 *Aphodius (Nialus) cobharensis* Stebnicka, Revue suisse, Zool., 92: 363, figs. 8—10, [n. syn.].

Material: Holotype male and 14 paratypes of *A. jhavanicus* — Rapti valley, Jhawani, 200 m (ZSM). Paratype male of *A. cobharensis* — Cobhar, 1370 m (ISEZ). — Lothar near Birganj, 170 m, 27. VIII. 1967, 12 ex. (BRIO), leg. Can. Nep. Exp.

Complementary description: Length vary from 3.5 to 4.5 mm. Colour ranges from deep black to reddish, sometimes a whole series is reddish. The usual variation in depth, diameter and density of punctures on pronotal surface occurs, as in those of elytral intervals.

Remarks: This species is known only from Nepal so far. The specimens at my disposal are smaller, lighter in colour and more slender than the specimens of the type-series.



Figs. 79—80. *Aphodius (Alocoderus) teyrovskyi* Balth. — 79. epipharynx; — 80. aedeagus (lateral view).
 Figs. 81—83. *Aphodius (Alocoderus) holdereri* Reitt. — 81. epipharynx; — 82—83. aedeagus (lateral and dorsal view).
 Figs. 84—85. *Aphodius (Nialus) insularis* Petr. — 84. aedeagus (dorsal view); — 85. epipharynx.
 Figs. 86—87. *Aphodius (Paremadus) phulcokiensis* Stebn., aedeagus (lateral and dorsal view).
 Figs. 88—90. *Aphodius (Paremadus) annapurnae* Stebn. — 88. epipharynx; — 89—90. aedeagus (lateral and dorsal view).

Key to the Nepalese species of the subgenus *Nialus* Muls.

- 1 Body black, reddish black, dark brown or castaneous without yellow areas on the head, pronotum and elytra. First segment of posterior tarsus $\frac{1}{3}$ longer than the upper tibial spur and longer than the following two segments combined (Group I) *A. (N.) jhavanicus*
- Body brown with yellow areas on the head, pronotum and elytra. First segment of posterior tarsus and upper tibial spur equal or unequal in length, subequal to the next two segments combined 2

- 2 Clypeal surface deeply and densely punctate, elytra oblong-oval. First segment of posterior tarsus thicker than the remaining segments and $\frac{1}{3}$ shorter than the upper tibial spur (Group II)..... *A. (N.) lividus*
 — Entire surface of the head deeply and densely punctate, elytra short oval. First segment of posterior tarsus the same thickness as the remaining joints and the same length as the upper tibial spur *A. (N.) insularis*.

3.1.58. *Aphodius (Paremadus) phulcokiensis* Stebnicka, 1986 (figs. 86—87)

1986 *Aphodius (Paremadus) phulcokiensis* Stebnicka, Acta zool. cracov., 29: 347, figs. 18—20.

Material: Phulchoki Mt. (Phulcoki), 2600 m, 12. VI. 1976, 1 ♀ (NHMB), leg. WITTMER & BARONI-URBANI.

Complementary description: Disc of pronotum in male with shallow, longitudinal furrow on the middle, apical spur of fore tibia bent inward. The remaining characters similar to those of female.

Remarks: This species was described from the same locality in Nepal on the base of two females. The subgenus *Paremadus* Nak. is the subject of a recent revision (STEBNICKA 1986).

3.1.59. *Aphodius (Paremadus) annapurnae* Stebnicka, 1986 (figs. 88—90)

1986 *Aphodius (Paremadus) annapurnae* Stebnicka, Acta zool. cracov., 29: 350, figs. 23—25.

Material: Gorkha Distr., NW Rupina La, Tabruk Kharka, 4000 m, 7—8. VIII. 1983, 4 ex (SMNS), 2 ex. (SMF), leg. MARTENS & SCHAWALLER.

Remarks: This species is known only from Nepal — Annapurna, 4000 m.

3.1.60. *Aphodius (Paremadus) yaralensis* (Petrovitz) Stebnicka, 1986

1968 *Caelius nepalensis* Petrovitz, Zeitschr. Arbeitsgem. österr. Entomol. 20: 37—38.

1986 *Aphodius (Paremadus) yaralensis* Stebnicka, Acta zool. cracov., 29: 348, figs. 21—22, [n. nom.].

Type-locality: Nepal, Yaral, Mingbo, 4100—4500 m.

Remarks: Since the original description no additional specimens were found. In accordance with the Recommendation 51 B of the International Code of Zoological Nomenclature, the name of primary author of the species is preserved.

3.1.61. *Aphodius (Paremadus) bagmatiensis* (Stebnicka, 1983)

1983 *Caelius bagmatiensis* Stebnicka, Revue suisse Zool., 90: 320, figs. 4—6.

1986 *Aphodius (Paremadus) bagmatiensis* Stebnicka, Acta zool. cracov., 29: 348.

Type-locality: Nepal, Bagmati, Tarke Ghyang, 3000—3400 m.

Remarks: Since the original description no additional specimens were found.

3.1.62. *Aphodius (Paremadus) langtangicus* (Stebnicka, 1983)

1983 *Caelius langtangicus* Stebnicka, Revue suisse Zool., 90: 321, figs. 7—8.

1986 *Aphodius (Paremadus) langtangicus* Stebnicka, Acta zool. cracov., 29: 348.

Type-locality: Nepal, Langtang National Park, Laurobinyak, 3850 m.

Remarks: Since the original description no additional specimens were found.

3.1.63. *Aphodius (Paremadus) yangricus* (Stebnicka, 1983)

1983 *Caelius yangricus* Stebnicka, Revue suisse Zool., 90: 321—322, figs. 9—10.

1986 *Aphodius (Paremadus) yangricus* Stebnicka, Acta zool. cracov., 29: 348.

Type-locality: Nepal, Bagmati zone, Yangri Ridge, 4150 m.

Remarks: The species of the subgenus *Paremadus* Nak. are close to the representatives of the subgenus *Phalacrothbus* Motsch. (= *Orodalus* Muls. et Rey). The differences are evident chiefly in the shape of pronotum and in general appearance.

Key to the Nepalese species of the subgenus *Paremadus* Nak.

- 1 Entire surface of the head very densely and coarsely punctate, nearly rugose. Base of pronotum largely bordered. Elytra blackish brown or brown with well delimited, yellow or reddish yellow spots *A. (P.) phulcokiensis*
- Anterior of head densely and coarsely punctate or entire surface of head with fine, less closely distributed punctures. Base of pronotum narrowly bordered. Elytra blackish brown or reddish brown, usually lighter at apex, without well defined spots 2
- 2 Base of pronotum with very fine, inconspicuous border faintly crenate by fine punctures *A. (P.) yaralensis*
- Base of pronotum narrowly but distinctly bordered and crenate by moderately coarse punctures 3
- 3 First segment of posterior tarsus as long as the upper tibial spur. Elytra about 2.0 times length of pronotum *A. (P.) yangricus*
- First segment of posterior tarsus twice as long as the upper tibial spur or $\frac{1}{2}$ longer. Elytra more than 2.0 times length of pronotum 4
- 4 First segment of posterior tarsus $\frac{1}{2}$ longer than the upper tibial spur. Elytra about 2.4 times as long as pronotum *A. (P.) bagmatiensis*
- First segment of posterior tarsus twice as long as the upper tibial spur. Elytra 2.2 to 2.6 times as long as pronotum 5
- 5 Anterior of head nearly rugose. Base of pronotum slightly lobed medially. Elytral intervals strongly convex at apex, striae with large deep punctures apically *A. (P.) langtangicus*
- Anterior of head alutaceous, not rugose. Base of pronotum rounded, unlobed medially. Elytral intervals faintly convex, the punctures of elytral striae vanishing at apex *A. (P.) annapurnae*.

3.2. *Oxyomus* including key

3.2.1. *Oxyomus nubigenus* Petrovitz, 1968

1968 *Oxyomus nubigenus* Petrovitz, Zeitschr. Arbeitsgem. österr. Entomol., 20: 35—36.

1985 *Oxyomus nubigenus*, — Stebnicka, Revue suisse Zool., 92: 366, figs. 18—19.

Material: Kosi, vicinity of Num, 1800—2000 m, 24. IV. 1984, Induwa Khola valley, 2100 m, 17. IV. 1984, 27 ex. (MHNG), leg. LÖBL & SMETANA.

Remarks: This species has been described from India — Darjeeling and recorded recently from the following localities in Nepal: Dobate Ridge, 2800 m, Kuwapani, 2500 m, Gokana, 1400 m.

3.2.2. *Oxyomus arunae* Stebnicka, 1985

1985 *Oxyomus arunae* Stebnicka, Revue suisse Zool., 92: 364—366, figs. 14—17.

Material: Kosi, Arun valley SS Num, 1050 m, 22. IV. 1984, 2 ex. (MHNG), leg. LÖBL & SMETANA.

Remarks: The species has been originally described from Arun valley at Num, 1500—1600 m.

3.2.3. *Oxyomus miliaris* (A. Schmidt, 1908) (fig. 91)

1908 *Aphodius miliaris* A. Schmidt, Soc. entomol., 23: 53.

1912 *Aphodius (Amidorinus) rosti* W. Koshantschikov, Rev. Russe Ent., 12: 519.

1922 *Oxyomus miliaris* A. Schmidt, Aphodiinae in: Tierreich, 45: 385, et Auct.

Material: Dhunche, 2500 m, 25. IX. 1981, 1 ♀ (ISEZ), leg. PAWŁOWSKI.

Complementary description: Epipharyngeal acroparia with mixed thin and somewhat thicker setae; the bristles of chaetoparia and chaetopodium short, rather thin, equal in size; paria and pedium covered with very short and thin setae.

Remarks: A mountainous species known from Indochina and from the Himalayas (no exact locality), considered as very rare. It is indicated in Nepal for the first time.

Key to the Nepalese species of the genus *Oxyomus* Steph.

- 1 Sides of pronotum strongly reflexed, base bordered and slightly crenate by fine punctures. Elytra strongly narrowed apically, each elytron with 8 carinae (including sutural, excluding marginal carina) *O. arunae*
- Sides of pronotum very finely to finely reflexed, pronotal base not bordered and not crenate by punctures. Elytra short-oval, faintly narrowed apically, each elytron with 9 carinae (including sutural, excluding marginal carina) 2
- 2 Body mat, pronotal punctures very fine to fine. Humeri not denticulate, elytral carinae very fine and flat, the spaces between carinae with regular row of shallow, moderate punctures. First segment of posterior tarsus thicker than the second, equal in length to the remaining segments combined *O. miliaris*
- Body moderately shining, pronotal punctures coarse. Humeri finely denticulate, elytral carinae convex, the spaces between carinae with two irregular rows of moderate punctures *O. nubigenus*.

3.3. *Aegialia* including key of the subgenus *Silluvia*

3.3.1. *Aegialia (Silluvia) wittmeri* Stebnicka, 1981 (figs. 92—93)

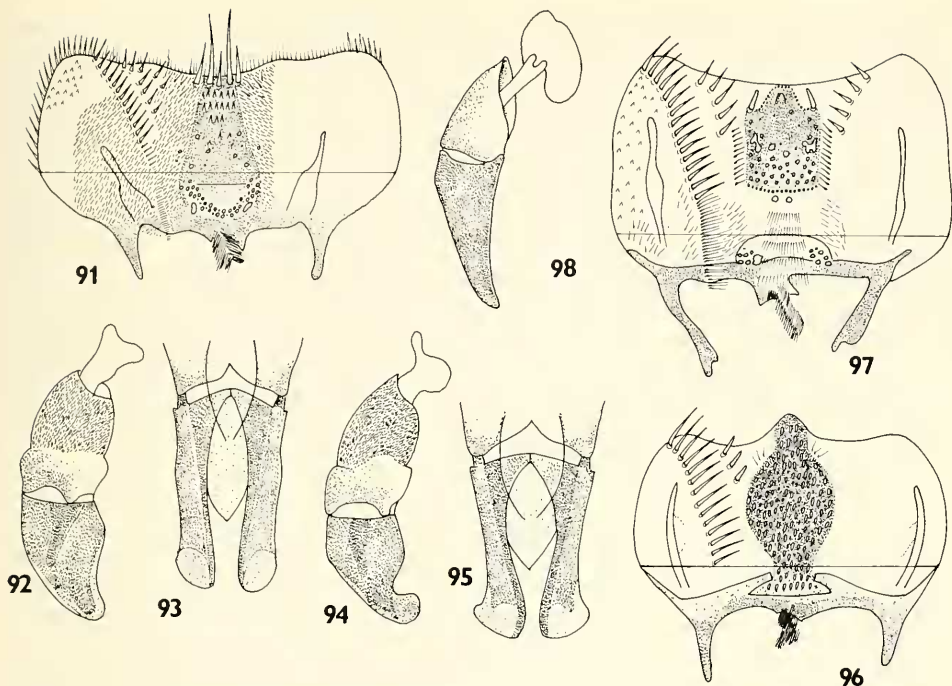
1981 *Aegialia (Silluvia) wittmeri* Stebnicka, Bull. Acad. pol. Sci., Sér. Sci. biol., 28: 539—540, figs. 1—3.

Material: Lalitpur Distr., Phulchoki Mt., 2650 m, 14. X. 1983, 4 ex. (MHNG), leg. LÖBL & SMETANA. — Eastern Nepal, 1979, 1 ex. (SMNS), leg. BHAKTA BAHADUR. — Taplejung Distr., ascent to pass Lasse Dara, 2500—2800 m, 6. IX. 1983, 1 ex. (SMNS), leg. MARTENS & DAAMS.

3.3.2. *Aegialia (Silluvia) gosainkundae* n. sp. (figs. 94—95)

Holotype: ♂ (ISEZ), Nepal, Langtang National Park, vicinity of valley Gosainkund, 3600 m, 27. IX. 1981, leg. KUSKA.

Description: Length 7.0 mm, width 2.1 mm. Body elongate, slender, parallel-sided, moderately shining; colour carbon-black, side margin of pronotum and sides of clypeus before genae reddish, antennal clubs dark brown; surface of pronotum and apical declivity of elytra setaceous, the setae extremely short, scarce, visible under high magnification.



- Fig. 91. *Oxyomus miliaris* A. Schm., epipharynx.
 Figs. 92—93. *Aegialia (Silluvia) wittmeri* Stebn., aedeagus (lateral and dorsal view).
 Figs. 94—95. *Aegialia (Silluvia) gosainkundae* n. sp., aedeagus (lateral and dorsal view).
 Fig. 96. *Saprosites japonicus* Waterh., epipharynx.
 Figs. 97—98. *Cnematoplatys numensis* n. sp. — 97. epipharynx; — 98. aedeagus (lateral view).

Head rather wide, slightly convex at middle of front, clypeal margin very finely reflexed anteriorly, genae small, not protrudent, their margins quite continuous with those of the clypeus; surface anteriorly with a band of fine punctures, front and occipital area moderately punctate, the punctures separated by one their diameter. Terminal segment of maxillary palpus elongate, widest at middle, very minutely piliferous.

Pronotum convex, sides visible when viewed from directly above, nearly straight to obtuse posterior angles, their margins finely crenulate; anterior angles acute, base bordered and crenate by punctures; surface punctures moderately large, very dense from anterior angles around to base, discal punctures less close, gradually increasing in size from anterior margin to base, separated by one to three their diameters.

Scutellum triangular with a few fine punctures on the middle.

Elytra parallel-sided, humeri strongly and sharply dentate, elytral striae moderately deep, the distant strial punctures crenating inner margins of the intervals; intervals moderately convex, slightly alutaceous on the disc and strongly shining in apical third, with minute scattered punctures, these of lateral part of shoulders larger and closer.

Metasternum convex, midline weak, surface punctures moderately coarse, rather close. Abdominal sterna minutely punctate, their margins smooth, not crenulate. Pygidium weakly convex, shagreened and shortly setaceous with convex transverse carina at middle and moderately deep eroded area.

Legs slender; the two first lateral teeth of fore tibia slightly approximate, the third separate, under side with three denticles, apical spur small, bent inward; middle and hind tibia slender, posterior tibia with incomplete transverse ridges, terminal spurs slender; hind tarsus a trifle shorter than the tibia, first segment as long as the upper tibial spur and considerably shorter than the next three segments combined.

Pars proximalis of male aedeagus pubescent. Female unknown.

Remarks: *Ae. gosainkundae* n. sp. is more similar to *Ae. wittmeri* from which it may be distinguished by the characters given in the key.

The important and fundamental morphological structures give the *Silluvia*-species an isolated position within the genus *Aegialia* Latr. The subgenus *Silluvia* Land. contains at present nine closely related and similar-appearing species confined to the area of Tibet, to the mountains of Burma and to the Western, Central and Eastern Himalayas. As far as can be judged from our present knowledge of their distribution, these species are characterized by restricted ranges and disjunct distribution, and may be regarded as endemic to particular parts of the mountain system.

Key to the Nepalese species of the subgenus *Silluvia* Land.

- 1 Length 7.0—7.1 mm, width 2.8—2.9 mm. Clypeal edge slightly emarginate before obtusely rounded, distinctly protrudent genae. Abdominal sterna finely crenulate along margins. First segment of posterior tarsus as long as the next three segments combined *Ae. (S.) wittmeri*
- Length 7.0 mm, width 2.0 mm. Clypeal edge rounded, not emarginate before small, not protrudent genae. Abdominal sterna smooth, not crenulate along margins. First segment of posterior tarsus considerably shorter than the next three segments combined *Ae. (S.) gosainkundae* n. sp.

3.4. *Saprosites*

3.4.1. *Saprosites japonicus* Waterhouse, 1875 (fig. 96)

1875 *Saprosites japonicus* Waterhouse, Trans. Ent. Soc. Lond.: 93, et Auct.

Material: Kathmandu, 1400 m, 21. IX. 1981, 2 ex. (ISEZ), leg. KUSKA.

Complementary description: Epipharyngeal epitorma sclerotized with numerous, closely distributed sensillae; 3 bristles of chaetopodium shorter and thicker than the very long bristles of chaetoparia.

Remarks: This species is known from Japan, Taiwan, China and Indochina, recorded from Bhutan by PETROVITZ (1975). In Nepal it is indicated for the first time.

3.5. *Cnematoplatys*

3.5.1. *Cnematoplatys numensis* n. sp. (figs. 97—98)

Holotype: ♂ (NHMB), Nepal, Arun river, Hedangna at Num, 800 m, 16. VI. 1983, leg. BRANCUCCI.

Paratype: ♀ (ISEZ), the same data as holotype.

Description: Length 4.2—4.5 mm, greatest width of pronotum 1.5—1.6 mm, of elytra 1.4—1.5 mm. Body elongate, shining, glabrous, colour dark castaneous.

Head very large, strongly convex, approximately $\frac{1}{2}$ wider than long and as wide as the

pronotum near posterior angles; clypeal margin finely reflexed, rounded each side of inconspicuous, slightly grooved median emargination, genae right-angled, strongly protrudent, their margins nearly quite continuous with those of clypeus; anterior of head alutaceous and minutely punctate, median and occipital area with fine, evenly distributed punctures separated by their diameter.

Pronotum convex, widest at anterior angles with small fovea each side; anterior angles slightly flattened laterally, their side margins distinctly reflexed and broadly rounded toward base; sides, posterior angles and base continuously bordered and minutely crenulate, base slightly lobed at middle and faintly emarginate before posterior angles; surface with longitudinal furrow on the disc, the punctures mixed minute to moderate, very dense, generally separated by less than their diameter.

Scutellum narrowly triangular, impunctate.

Elytra parallel-sided, humeri strongly denticulate, striae deeply impressed with subequidistant punctures distinctly crenating inner margins of the intervals; intervals two times as wide as striae, convex with fine and dense punctures separated by their diameter; elytral suture apically with two small, obtuse processes. Flight wings brachypterous.

Metasternum convex, shagreened, coarsely and densely punctate, midline impressed. Abdominal sterna smooth, penultimate sternum with a band of fine punctures; pygidium convex with transverse carina in basal third, finely punctate.

Legs short, femora and tibia nearly equal in length; fore tibia with three small, sharply pointed lateral teeth and short acute terminal spur; middle and hind tibia flattened dorsally, outer margins finely setaceous without transverse ridges; apical setae very short, inconspicuous, the two apical spurs unequal in length, slightly bent outward; tarsi very short, considerably shorter than the tibia, joints nearly as long as wide, metatarsus shorter than the next two segments combined.

The type of epipharynx characteristic of the representatives of the tribe Eupariini. The bristles of chaetoparia very long and thick, 5—6 bristles of chaetopodium the same length as those of chaetoparia, somewhat thicker. Paria and pedium very scarcely setaceous.

F e m a l e : Pronotum somewhat narrower, last abdominal segment longer than in male.

R e m a r k s : The genus *Cnematoplatys* A. Schm. includes only two previously described species, *C. benardi* A. Schm. and *C. sumatrana* Balth., both known exclusively from Sumatra. *C. numensis* n. sp. is the typical member of the genus, characterized by short, dorsally flattened tibiae, very short tarsi and by very large head. It differs from the above mentioned species by many characters.

3.6. *Psammodius*

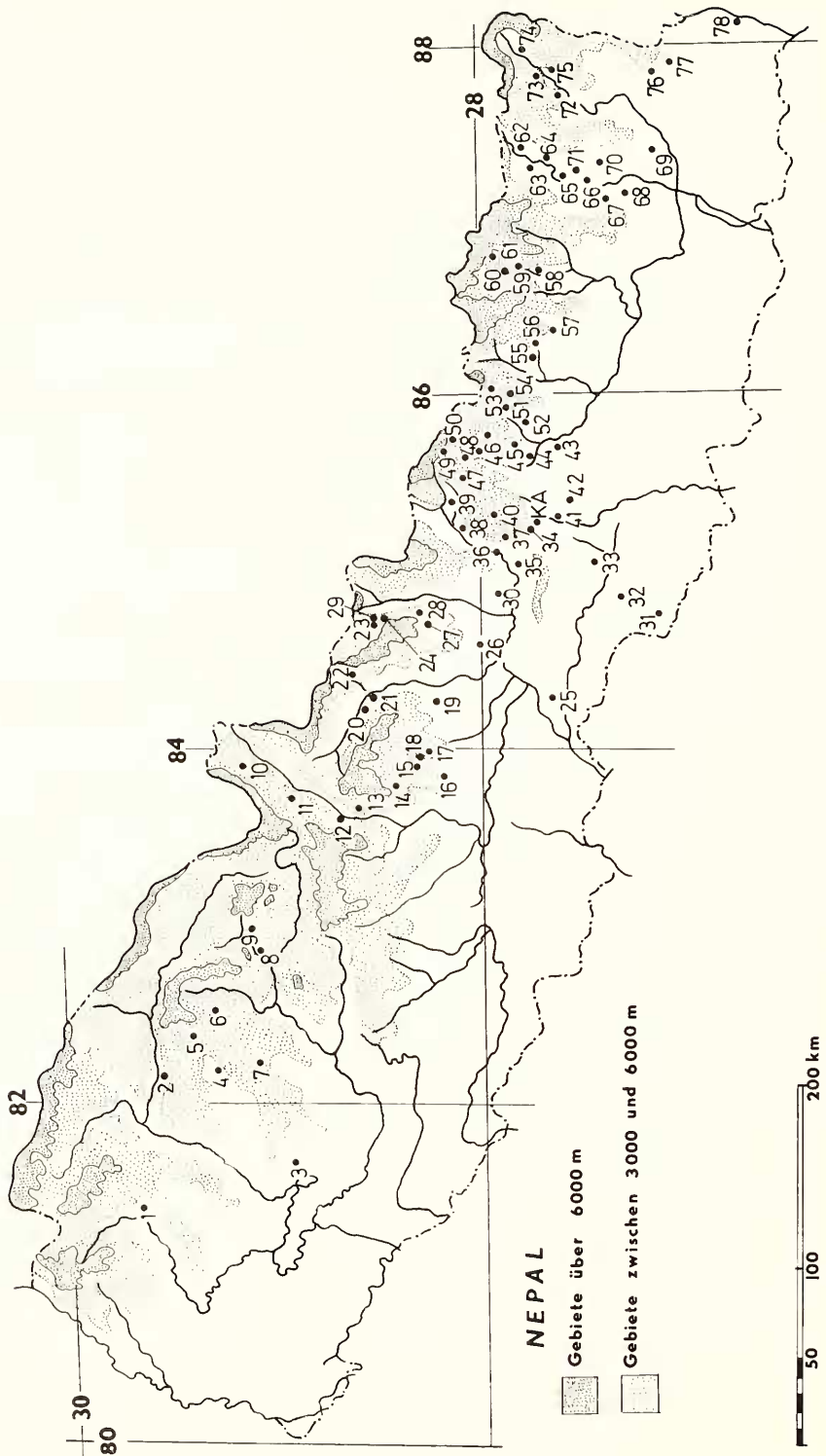
3.6.1. *Psammodius (Leiopsammodius) gestroi* (Clouët, 1900)¹⁾

1900 *Psammobius gestroi* Clouët, Ann. Soc. Ent. Belg., 44: 13.

1981 *Psammodius (Leiopsammodius) gestroi*, — RAKOVIČ, Rozpr. Čsl. Akad. Věd., 91: 38—39, figs. 25, 36.

1983 *Psammodius (Leiopsammodius) gestroi*, — Pittino, G. it. Ent., 1: 96.

¹⁾ The species of the tribe Psammodiini including those found recently in Nepal have been described and revised by PITTINO (1983, 1984) and by RAKOVIČ (1977, 1981). I have not studied the material of Nepalese Psammodiini, thus, the list of known species and data concerning their distribution in Nepal are taken from the literature cited.



Distribution: Afghanistan, Pakistan, Burma, Cambodja and Nepal — Lothar near Birganj, 170 m.

3.6.2. *Psammodyus* (s. str.) *tesari* Rakovič, 1977

1977 *Psammodyus tesari* Rakovič, Acta ent. bohemoslov., 74: 317.

1981 *Psammodyus* (s. str.) *tesari* Rakovič, Rozpr. Čsl. Akad. Věd., 91: 57—58, fig. 66.

Distribution: Pakistan, Ceylon, India and Nepal (no localities).

3.6.3. *Psammodyus* (s. str.) *nepalensis* (Balthasar, 1971)

1971 *Psammobius nepalensis* Balthasar, in: Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya, 4: 18.

1981 *Psammodyus* (s. str.) *nepalensis*, — Rakovič, Rozpr. Čsl. Akad. Věd., 91: 62—63, figs. 57, 115.

Distribution: Nepal, Rapti valley, Jhawani, 200 m.

3.6.4. *Psammodyus* (s. str.) *macnamarae* Pittino, 1984

1984 *Psammodyus* (s. str.) *macnamarae* Pittino, G. it. Ent., 2: 15—18, fig. 1.

Distribution: India and Nepal — Lothar near Birganj, 170 m.

Fig. 99. Collecting localities in Nepal (including the localities taken from cited literature). — 1. Chitre, Ghat Khola; — 2. Pina, Rara Ridge; — 3. Dailekh; — 4. Chauta at Neurigad, Sinja Khola; — 5. Maharigaon, Machidoela Pass; — 6. Rampur, Theral; — 7. Jumla; — 8. Bagar La, Dolpo; — 9. Namu La, Dolpo; — 10. Mustangbhot; — 11. Kopchepani, Kali Gandaki river; — 12. Ghasa, Lethe; — 13. Gorapani Pass, Parbat, Pun Hill; — 14. Annapurna, Chomrung; — 15. Sarankot; — 16. Nuwakot; — 17. Pokhara; — 18. Dhampus; — 19. Lamjung, Besisahar, Marsyandi Khola; — 20. Thimang; — 21. Bagarchap; — 22. Dudh Khola valley; — 23. Chuling Khola, Djongshi Kharka, Djinshi Kharka, Meme Kharka; — 24. Rupina La, Kalo Pokhari, Tabruk Kharka; — 25. Jhawani, Rapti valley; — 26. Gorkha; — 27. Barpak, Darondi Khola; — 28. Doroni; — 29. Nyak, Buri Gandaki; — 30. Dhading; — 31. Birganj, Lothar; — 32. Simra, Adhabhar; — 33. Hitaura, Thevai; — 34. Manhari; — 35. Kakani; — 36. Trisuli Bazar; — 37. Likhu Khola valley; — 38. Dhunche; — 39. Syabru; — 40. Thame; — 41. Cobhar, Lalitpur — 42. Phulchoki Mt., Godawari; — 43. Chaubas; — 44. Indrawati Khola, Saretar; — 45. Naulaphur; — 46. Thare Pati; — 47. Gosainkund; — 48. Tarke Ghyang, Yangri Ridge, Malemchi; — 49. Langtang, Laurobinyak; — 50. Shermathang; — 51. Barabhise, Dobate Ridge, Jangtang Ridge; — 52. Danda Pakhar; — 53. Tarang-Marang; — 54. Ting Sang La; — 55. Jiri, Chordung; — 56. Those, Thodung; — 57. Bhandar; — 58. Jubing; — 59. Lughla, Khumbu, Lobuche; — 60. Khumjung, Dudh Kosi valley; — 61. Pangboche, Yaral, Mingbo; — 62. Gorza; — 63. Lamobagar Gola; — 64. Mure; — 65. Num; — 66. Pangma, Ahale; — 67. Mangmaya, Crete; — 68. Kuwapani, Chichila; — 69. Dhankuta, Hille; — 70. Khandbari, Tashigaon, Arunthan; — 71. Hedangna; — 72. Amjilesa; — 73. Kibla; — 74. Ghunsa Khola; — 75. Mundung; — 76. Ghitang Khola, Ilam; — 77. Mai Pokhari; — 78. Karkabita, Jhapa; — KA. Kathmandu Distr.: Patan, Gokana, Chauni, Mamche Danda, Ganabahal, Baneshwar, Bhurumche, Sakhu, Gulubhanjyang, Patibhanjyang. The stands not localized on the map: Induwa Khola valley, Bi Khola valley, Chandam Bari.

3.7. *Rhyssmodes*3.7.1. *Rhyssmodes indicus* Pittino, 1984

1984 *Rhyssmodes indicus* Pittino, G. it. Ent., 2: 22—25.

Distribution: Philippines, Laos, Thailand, Vietnam, Burma, Taiwan, China, India and Nepal — Lothar near Birganj, 170 m; Kathmandu, 1400 m; Adhabhar 4 mi N Simra, 150 m.

3.8. *Rhyssemus*3.8.1. *Rhyssemus* (s. str.) *inscitus* (Walker, 1858)

1858 *Psammодиус inscitus* Walker, Ann. Mag. Nat. Hist., 3: 207, et Auct.

1984 *Rhyssemus inscitus*, — Pittino, G. it. Ent., 2: 39—41.

Distribution: Widespread from Madagascar throughout the whole Oriental Region eastwards to the Australian Region. Nepal — Adhabhar 4 mi N Simra, 150 m; Kathmandu, 1400 m; Lothar near Birganj, 170 m; Thevai near Hitaura, 200 m.

3.8.2. *Rhyssemus* (*Trichiorhyssemus*) *nepalensis* Pittino, 1983

1983 *Rhyssemus* (*Trichiorhyssemus*) *nepalensis* Pittino, G. it. Ent., 1: 119—120, figs. 9, 18.

Distribution: Nepal, Prov. Bagmati, Tarang Marang, 1000 m.

3.8.3. *Rhyssemus* (*Trichiorhyssemus*) *adhabharicus* Pittino, 1983

1983 *Rhyssemus* (*Trichiorhyssemus*) *adhabharicus* Pittino, G. it. Ent., 1: 116, 118—119, figs. 8, 17, 42—45.

Distribution: Nepal — Kathmandu, 1400 m; Adhabhar 4 mi N Simra, 200 m; Lothar near Birganj, 170 m.

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5. Index of genera, subgenera and species

- | | |
|---|---|
| <i>abditus</i> , <i>Aphodius</i> 32 | <i>calo</i> , <i>Aphodius</i> 14 |
| <i>Acrossus</i> 21 | <i>Carinaulus</i> 8 |
| <i>adhabharicus</i> , <i>Rhyssenus</i> 48 | <i>castetsi</i> , <i>Aphodius</i> 21 |
| <i>Aegialia</i> 42 | <i>Cinacanthus</i> 4 |
| <i>Aganocrossus</i> 33 | <i>Cnematoplatys</i> 44 |
| <i>Agolius</i> 4 | <i>cobharensis</i> , <i>Aphodius</i> 38 |
| <i>Agrilinus</i> 16 | <i>cornutus</i> , <i>Aphodius</i> 14 |
| <i>Alocoderus</i> 37 | <i>costatulus</i> , <i>Aphodius</i> 12 |
| <i>Amidorinus</i> 42 | <i>crenatus</i> , <i>Aphodius</i> 14 |
| <i>Ammoecius</i> 9 | |
| <i>analis</i> , <i>Aphodius</i> 8 | <i>decoctor</i> , <i>Aphodius</i> 27 |
| <i>andrewesi</i> , <i>Aphodius</i> 19 | <i>diadema</i> , <i>Aphodius</i> 11 |
| <i>angustiarum</i> , <i>Aphodius</i> 23 | <i>dierli</i> , <i>Aphodius</i> 8 |
| <i>annapurnae</i> , <i>Aphodius</i> 40 | <i>dindigalensis</i> , <i>Aphodius</i> 12 |
| <i>Aphodius</i> 8 | <i>dunchensis</i> , <i>Aphodius</i> 10 |
| <i>arunae</i> , <i>Oxyomus</i> 41 | |
| <i>atritus</i> , <i>Aphodius</i> 11 | <i>eberti</i> , <i>Aphodius</i> 21 |
| | <i>echinatus</i> , <i>Aphodius</i> 21 |
| <i>bagmatiensis</i> , <i>Aphodius</i> 40 | <i>emodus</i> , <i>Aphodius</i> 23 |
| <i>Balthasarianus</i> 32 | <i>Esymus</i> 4 |
| <i>bepyrus</i> , <i>Aphodius</i> 31 | |
| <i>bhutanensis</i> , <i>Aphodius</i> 19 | <i>fasciger</i> , <i>Aphodius</i> 18 |
| <i>Bodilus</i> 37 | <i>fimetarius</i> , <i>Aphodius</i> 18 |
| | <i>fruhstorferi</i> , <i>Aphodius</i> 33 |
| <i>Caelius</i> 40 | |
| <i>Calaphodius</i> 35 | <i>gestroi</i> , <i>Psammodius</i> 45 |

gogona, *Aegialia* 4
gosainkundae, *Aegialia* 42
gregori, *Aphodius* 32

haafi, *Aphodius* 19
himalayana, *Aegialia* 4
bimalayanus, *Aphodius* 3
bingstoni, *Aphodius* 23
holdereri, *Aphodius* 37

immarginatus, *Aphodius* 9
inscitus, *Rhyssenus* 48
insularis, *Aphodius* 38
irregularis, *Aphodius* 18

jacksoni, *Aphodius* 27
japonicus, *Saprosites* 44
javanicus, *Aphodius* 38
jirianus, *Aphodius* 29
jubingensis, *Aphodius* 24

kashmirensis, *Aphodius* 3
kathmandui, *Aphodius* 21
khandui, *Aphodius* 4
khuntianus, *Aphodius* 33
Koshantschikovi 19
kuskai, *Aphodius* 15

Labarrus 38
langtangicus, *Aphodius* 40
Leiopsammodius 45
lewisi, *Aphodius* 8
lividus, *Aphodius* 38
Loboparius 9

macnamarae, *Psammodius* 47
maderi, *Aphodius* 25
mabriensis, *Aphodius* 3
marginellus, *Aphodius* 11
martensi, *Aphodius* 36
miliaris, *Oxyomus* 42
milvus, *Aphodius* 37
moestus, *Aphodius* 35
moricae, *Aphodius* 16
montisamator, *Aphodius* 16
murensis, *Aphodius* 25

nepalensis, *Aphodius* 26
nepalensis, *Caelius* 40
nepalensis, *Psammodius* 47
nepalensis, *Rhyssenus* 48
Nialis 38
nigrosulcatus, *Aphodius* 29
nigrovirgatus, *Aphodius* 29
nubigenus, *Oxyomus* 41
numensis, *Cnematoplatys* 44

opacipennis, *Aphodius* 23
orientalis, *Aphodius* 12
Orodalus 41
Oxyomus 41

palea, *Aphodius* 35
Paradidactylia 19
Paremadus 40
Paulianellus 25
peculator, *Aphodius* 16
petrovitzi, *Aegialia* 3
Phalacroanthus 19
Pharaphodius 11
phulcokiensis, *Aphodius* 40
Plagiogonus 35
Platyderides 21
Pleuraphodius 8
pokharensis, *Aphodius* 31
priscus, *Aphodius* 12
Psammobius 45
Psammodius 45
Pseudacrossus 15

ramamiensis, *Aphodius* 35
rangoonensis, *Aphodius* 31
redargutus, *Aphodius* 12
Rhyssmodes 48
Rhyssenus 48
ritsemai, *Aphodius* 24
robustus, *Aphodius* 14
rostri, *Aphodius* 42
rufipennis f., *Aphodius*

Saprosites 44
Scarabaeus 8
scheibei, *Aphodius* 10
scheneri, *Aphodius* 10
sikkimensis, *Aphodius* 4
Silluvia 42
simlaicus, *Aphodius* 23
sindicus, *Rhyssmodes* 48
sorex, *Aphodius* 8
subpilosus, *Aphodius* 12

tesari, *Psammodius* 47
Teuchestes 8
teyrovskiyi, *Aphodius* 37
thibetanus, *Aphodius* 21
Trichaphodius 27
Trichiorhyssenus 48
Trichonotulus 21
trisuliensis, *Aphodius* 28

urostigma, *Aphodius* 33
urostigmoides, *Aphodius* 33

vitalisi, *Aphodius* 9
viturati, *Aphodius* 25
vultuosus, *Aphodius* 31

yangricus, *Aphodius* 41
yaralensis, *Aphodius* 40

zojilae, *Aphodius* 3

wittmeri, *Aegialia* 42
wittmeri, *Aphodius* 4

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